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CONSTRUCTION ACCOUNTING
AND
FINANCIAL MANAGEMENT

William E. Coombs

DODGE BOOKS

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CONSTRUCTION ACCOUNTING AND FINANCIAL MANAGEMENT

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FOREWORD

Although accounting principles do not change, I think it is reasonable to say that their application to any particular industry, and to any specific business in that industry, usually requires careful analysis and sound judgment. This statement is certainly true of the construction industry. This book cannot take the place of detailed information nor of the experience with individual problems of any particular construction company. It can, however, survey the problems peculiar to the construction industry and indicate how to apply standard accounting techniques to arrive at sound solutions.

With operating conditions so varied and the individual contractor's circumstances likely to be so complex, it is often necessary to go back and review basic accounting and business principles in relation to the specific conditions in a given company before management can use accounting as a true operational tool. It is for this reason that this book is devoted more to the "why" than to the "how" of construction accounting. Certainly, among the techniques described, the experienced accountant will find few, if any, that are basically unfamiliar to him, but he may see them applied in ways that may be somewhat unexpected.

To the accountant, the value of this book should lie in the fact that it provides a review of the reasons for procedures that are too often applied unthinkingly, and the practical reasons why procedures that are standard in other businesses are either not used or are sharply modified. Above all, this volume should serve as a checklist of potential problems and opportunities in financial control. For the banker, the bondsman, the lawyer, and the student, the discussions of how figures are developed may help to make contractors' business statements more intelligible and useful, and it is hoped that the over-all discussion may offer a worthwhile review of the accounting and financial management aspects of the industry.

Primarily, however, this book was written for the individual contractor himself. It is he who must buy and use the accountant's figures, and it is he who must rely on those figures in making the decisions on which his business must stand or fall. It is unusual to find a contractor who is also a trained accountant. Yet if his business is to grow and succeed, he must learn to understand and use the help that accounting can give him. He should also find it helpful to understand and evaluate the recommendations of his professional advisers and be able to put those recommendations into practical operation. Finally, he ought to be able to determine when a given record or procedure is necessary and whether it is worth what it costs.

It is my earnest hope that this book will not only prove as useful as it was planned to be to anyone whose activities touch on the construction industry, but that it may also help to give the individual contractor a better understanding of an increasingly important part of his own operations—the financial control that too often in the past has been looked upon as a necessary evil.

In one sense, this book is more of a compilation than an original work. For years I have been shamelessly picking the brains of everyone I met who would talk about construction accounting. No doubt many of my former associates will recognize some of their own thoughts and ideas in these pages. Forms, too, have been collected from many sources. To all these people and companies I owe a large debt of gratitude.

To the following my special thanks: The Charles R. Hadley Company for numerous forms and the article reprinted in Appendix A; D. Bryce Curwin for his article reprinted in Appendix B; Edward B. Wilcox for his article reprinted in Appendix C; Robert Morris Associates for its form for contractors' financial statements; the American Institute of Certified Public Accountants for permission to reprint the Wilcox article as well as *Accounting Research Bulletin No. 45;* and the National Cash Register Company for various forms. Clifford S. Nelson has made an important contribution to this volume by supplying much of the material explaining the banker's viewpoint, a knowledge of which is crucial to the development of the essential teamwork among banker, bondsman, and contractor.

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1

Basic Operational Patterns

The primary objective of accounting in any business is to help that business make the maximum profit after taxes. Unless accounting makes its full contribution to that objective, its cost cannot be justified. In the construction industry, one of the ways accounting pays for itself is to help management to control operations. Another of the ways is to help management utilize its working capital to the greatest possible advantage.

The physical elements entering into normal construction operations are many and varied. The only common denominator is money. Therefore, one of the principal jobs of accounting in the construction industry is to translate operating results into terms of money. To do that, it must follow the basic operational patterns of the industry and of job management.

The job as the basic unit

Essentially, the work of a construction contractor is the improvement of real property. That means the bulk of his work must be done at the site of the property to be improved and not, as in manufacturing, at a central factory or plant. Accordingly, once a construction contract is made, the contractor's operations necessarily fall into these four major phases:

1. Procure the necessary labor, materials, supplies, and equipment to do the work.
2. Transport them to the job site.
3. Combine them to complete the work contracted.
4. Remove the men, equipment and surplus materials and supplies from the job site when the job is completed.

The completion of these four phases in the physical work on any particular project constitutes a "job"—the basic unit of construction operations and so the basic unit of management and of accounting for construction companies.

A job normally consists of the performance of a single contract for a single owner. However, it is not unusual for large projects to be broken down into several contracts. It is somewhat less common to find a single contract breaking down into several jobs, for example, when a single owner lets a single contract covering a wide variety of work at widely separated locations. On certain types of projects, work may be done for a number of owners and the project will still be treated as a single job. One good example is a road contractor who paves numerous driveways for owners along the way. Another example is the builder of tract housing who, while building a tract, also builds houses for individual lot owners within the tract.

The principal test seems to be one of operating control. If a project can logically be made a unit for purposes of operating control it will be considered as a single job for purposes of management and accounting. It is true that accounting must take into account the separateness of each individual contract and of each individual owner for billing. It is also necessary to distinguish between owners for the application of lien laws (Chap. 14), but operationally a project is looked upon as a single job if it can be run as a unit.

Types of jobs and contractors

The extent to which any of the four major phases referred to above presents problems to any particular contractor on any particular construction job depends on a great many facts. For example, the size, nature, and location of the job in relation to the other jobs which the contractor may have in progress at any given time will be important. So will the size and scope of the contractor's organization, its experience with the type of work involved, the necessary financing, and the extent to which specialized aspects of the work can be subcontracted.

The construction industry, like other industries, has its specialists. Some specialize in heavy engineering projects, such as dams, bridges, tunnels, or roads. Others specialize in large office, industrial, and public buildings. Still others specialize in small stores, residences, apartments, tract housing and the like. There are many other specialists among the prime contractors.

Then, cutting across the entire industry, are the specialty subcontractors such as the electricians, the plumbers, the roofers, the concrete finishers, the heating and air conditioning installers, the plasterers, and dozens of others.

Each of these specialists has accounting requirements peculiar to his specialty. In addition, there are certain factors, apart from the mechanics of construction, that may be significant in operations and hence in accounting for operations. Some examples of such factors are:

1. Location of jobs
2. Procurement of labor and materials
3. Use of equipment
4. Control of labor, materials, and equipment
5. Subcontracting
6. Requisite management personnel
7. Financing requirements.

Job location: If a contractor confines his operations to one city or other relatively small local area, problems arising from job location are usually at a minimum. However, when he begins to take jobs more than a stated distance from a central point he often begins to incur liability for subsistence and travel time and sometimes for the cost of transporting his workmen. In addition to these new costs, questions of payroll taxes, income tax withholding, and insurance on the additional payments arise. Also, the contractor faces increased costs in moving materials, supplies, and equipment to the job site.

Move the job a little farther away and there are the added costs of moving the families and possessions of key personnel. If the job is far enough away from a city or town there arises the necessity of providing camp, mess hall, and possibly commissary facilities. If the job is in a foreign country additional problems arise in connection with banking, letters of credit, multiple currencies, exchange rates, import duties, and taxes levied by the foreign country on the incomes of the company and its employees. The list could be extended indefinitely. The point is that job location is a physical fact which, by itself, can produce a wide variety of operational problems and related accounting problems.

The result is that the smaller prime contracts and a substantial share of the specialty subcontracts tend to go to local firms because the size of the job does not warrant the added expense inherent in widely scattered jobs. The larger the job, the farther a large, well-organized, and well-financed firm can afford to go for it, but the farther it goes, the greater the accounting activity needed to deal with the problems created by distance alone. By the same token, when small firms start to branch out and seek work farther from their center of operations, there is a tendency, at least on the first such job, to overlook the problems created by distance in determining the amount of their bids.

Procurement of labor and material: The smaller and simpler a job is, the fewer will be the accounting requirements involved in the procurement of labor and materials. The logistics of supply is complicated by quantity and variety as well as by distance. Thus in a simple house-building job most, if not all, of the labor and materials will be available locally, and any savings in price which might be made through purchases from distant sources must be weighed against the readiness of local suppliers to serve and the delays and transportation costs inherent in distance. However, as jobs become more complicated, so do the procurement problems and the accounting necessary to control these problems.

Lead time must be considered in purchasing products which must be fabricated for the job. For example, steel pipe for pipelines, special steel sash and doors, and heavy motors and transformers must often be built to order, and they must be ordered in advance (and followed through with expediting effort) so that they will be ready when needed.

In the field of labor, highly skilled specialists like cable splicers or agronomists must often be supplied for relatively short periods of time and very often on short notice. Few organizations have enough work to keep specialists busy for indefinite periods, and when such personnel are required it is necessary to locate, hire, and transport them to the job. They must not arrive on the job too soon or their time, which is usually very expensive, will be wasted. They must not arrive on the job too late because delay is one of the construction industry's most costly bugaboos.

The costs of procuring such specialized materials and labor must be known if they are to be controlled and if funds are to be provided to pay for them. The more complicated procurement operations become, the more important the element of timing becomes, and unless adequate accounting records are kept, control of timing by judicious use of expediting becomes increasingly difficult.

Use of equipment: The extent to which operations of a contractor require the use of equipment depends largely on the type of work being done, and the extent to which those parts of the work requiring special equipment can be subcontracted.

To own construction equipment usually requires a great deal of capital. If a contractor owns equipment he must be constantly alert to avoid having all his working capital represented by idle or worn-out equipment. Many contractors have found it more economical to rent whatever equipment they need rather than tie up the funds required to own it. Those who do own their own equipment must constantly be ready to decide when it is more economical to dispose of any particular item than to keep it in repair.

What equipment is needed is an operational question. Whether to provide it by ownership, rental, or subcontracting is a management question that can be answered intelligently only on the basis of facts that accounting is called upon to supply.

Control of labor, materials and equipment: Materials (Chap. 9) are subject to two kinds of control—physical and financial. The physical control is, in large measure, an operational fact which must be reflected in the accounts only to the extent necessary to keep management advised of how much is on hand. Management, however, is continually called upon to make financial decisions based on these questions: (1) Do we have it or must we buy it? (2) If we must buy it, how much are we going to have to pay for it?

Labor and equipment costs are the two most important variables in construction costs. To control their physical application it is necessary to know from day to day how much work is being accomplished in relation to the amount of labor and equipment being used. The tool for doing this is "unit costs"—or cost accounting.

It is not hard to see that the larger and more complicated the job, the greater is the volume of accounting needed to control labor, materials, and equipment costs. There is one important exception. If a large proportion of the work is subcontracted, as in large building projects, the problems of controlling labor, materials, and equipment are considerably lessened. However, as pointed out below in the discussion of subcontracting, this procedure merely exchanges one set of operational and accounting problems for another.

Problems in subcontracting: From the viewpoint of the prime contractor, it is often good business on a large contract to spread the risk, the financing, and the operational problems by subcontracting certain portions of the work. From the viewpoint of the subcontractor, his problems are the same, in both operations and accounting, as those of the prime contractor on those portions of the work not being subcontracted.

Nevertheless, the prime contractor is almost always responsible to the owner for any failure of the subcontractor either to do his work correctly or to pay his labor and material bills ("Liens," Chap. 14). For this reason the prime contractor must, to some extent, supervise not only the physical work of the subcontractor, but also watch the latter's financial condition. It is usually up to the accounting department to control payments to subcontractors and take whatever steps are necessary to safeguard the prime contractor and the owner against liens (or comparable claims on government jobs where liens are inapplicable) and against unintentional releases of the subcontractor's surety if the subcontractor is bonded.

The subcontractor who, in turn, subcontracts a portion of his work is, in most respects, in the same position on the subcontracted work as a prime contractor. The main difference is that he is responsible to the prime contractor instead of to the owner.

Both prime contractors and subcontractors must, of course, be alert to see that their contracts are so drawn and their operations and accounting so controlled that they receive payment for work actually done and materials actually supplied. Subcontractors often complain that they are at the mercy of the prime contractor. This is true to some extent, though no more so than the prime contractor's assertion that he is equally at the mercy of the owner or architect. The fact is that it is up to each contractor to take whatever steps are necessary to safeguard his own interests; and before such action can be taken it is necessary to know the facts, which can be supplied by correct accounting.

Supplying management personnel: Job management is essentially an operational function. In other words, the first function of job management, regardless of profit, is to get the work done. In both theory and practice everything else is secondary. If a profit is to be made, the most efficient use of labor, materials and equipment is required, and this requirement cannot be fulfilled without adequate supervision and planning.

The need for additional or better job management can be detected in a number of ways. One evidence is failure to meet time schedules, or the presence on the job of idle men and equipment. Still another is visual observation by an experienced project superintendent of methods and procedures. None of these, however, reveals the inadequacies in job management so promptly as the scrutiny of job costs which have been carefully kept and promptly rendered.

Of course, where the very management whose efficiency is being checked is in a position to control the preparation of the cost figures, the effectiveness of cost keeping can be nullified. Under these conditions, the expense of keeping the records is wasted. Still, properly prepared and used, job cost figures are one of the most useful tools known to the industry for controlling job operations.

Financing requirements: The lifeblood of a construction job, as of any other business undertaking, is money. Progress payments are an established method of financing and it is a rare contractor whose working capital position is so strong that he can be indifferent to them. In fact, through such devices as advances for mobilization, unbalancing the payment schedules, and generous estimates of completion, many contractors not only offset the customary retained percentage but actually recover their initial investments early in the job and continue it entirely on the funds received through progress payments. (Chapter 2 deals with some of the income tax aspects of these procedures.)

However that may be, owners require accounting statements as the basis for payment regardless of whether the contract is lump sum, unit price, time-and-material, or cost-plus-fixed-fee. Regardless of the type of contract, the accounting records must furnish the basis for billings to the owner. This is no less true in those companies where the accounting is done by engineers from informal records. In contracts involving direct reimbursement for cost (such as the fixed-fee or target types discussed below), complete and accurate accounting for expenditures is, of course, vital.

If financing is done through banks, there is no substitute for adequate financial statements in securing maximum financing. Bonding companies rely heavily on the financial position of the company as a whole and of individual jobs in determining bonding capacity (Chap. 16).

If financing is done through joint ventures it is, of course, axiomatic that the inactive members of the venture will require regular financial reports. The same is true if the owner provides a revolving fund.

Types of construction contracts

It is common to describe construction contracts by the method of payment they provide. When so classified, they fall into three groups.

In the first group are found those contracts under which the contractor agrees to do certain specified things for an agreed price. In this group are lump sum and unit price contracts.

In the second group are those contracts under which the contractor is reimbursed for his costs and receives a fee for his services. In this group are the cost-plus-a-percentage-of-cost, cost-plus-a-fixed-fee, and force account contracts.

In the third group are those contracts which combine elements of the first and second groups. In this group are the cost-plus-fee contracts with so-called target estimates or with a guaranteed maximum, and the time-and-material contracts in which the contractor's fee or profit is reflected in the rates charged for the time, the materials, and the overhead allowance. Each group has its own peculiar accounting requirements in addition to those general requirements which are common to all.

Regardless of the nature of the contract, it should be possible to answer "yes" to each of these questions:

1. Do we have the information necessary to submit our progress billings promptly and accurately?
2. Do our permanent records provide complete and accurate support for our progress billings?
3. Are we able to support our claims for extra work done for the client or for others by written orders signed by an authorized representative of the person for whom the work was done?
4. Do we know what we bought, how much it cost, and whether we got it?
5. Are our routines for purchasing, receiving, vouchering, and disbursing arranged so that we can take all discounts, pay bills promptly and accurately enough to keep our credit good, and still avoid duplications and overpayments?
6. Can we tell what we did with the things we bought?
7. Do our timekeeping and payroll procedures let us pay our employees promptly and accurately and in accordance with union rules, wage and hour rules (where applicable) and any special rules in the contract (such as the Copeland Act, the Davis-Bacon Act, and various state and local statutes)?
8. Are our payroll records sufficient for federal and state payroll and withholding tax purposes?

9. Can we supply, from the records, the information needed by management?

10. Can we supply our bank and our bonding company the detail they want concerning each job as well as our over-all operation?

Lump sum and unit price jobs will tend to involve greater emphasis on cost accounting and unit costs. Of course, sometimes the jobs are small enough and closely enough supervised to maintain maximum efficiency without cost records. Sometimes the contractor himself does the work of superintendent or foreman. On such lump sum jobs, the cost records will tend to be only what the individual contractor needs to give him estimating data.

The important point is that accounting, whether cost accounting or general accounting, is never an end in itself. Unless it contributes more than its cost to the final profit it cannot be justified. Thus, in lump sum and unit price contracts, the principal use of cost accounting is to help management save on costs by pointing quickly to the operations where more or better supervision is needed. Its by-product may be better estimating on future work where the unit costs are applicable. To do the job properly, once day-to-day cost figures are developed they must be in the hands of job management within 24 hours.

Cost-plus contracts usually require accounting emphasis on the documentation of costs and expenditures, to the end that nonreimbursable expenses will be held to a minimum; and that maximum accountability be maintained for materials, supplies, labor, and equipment. In this type of contract, it is cutomary to find agreed rates for equipment rentals with resulting procedures roughly describable as an equipment "payroll." It is also common to see some lump sum provision for overhead expenses not incurred at the job site and special provisions for such items of cost as repairs, maintenance, and the cost of tools and supplies. Unless contracts of this type are written with exceptional care, the job accountant is faced with innumerable problems of interpretation and interminable arguments with the owner's representatives.

One problem which is typical of the cost-plus type of contract is dealing with the owner's representative who tries to substitute his judgment for that of job management. At the accounting level this tendency will usually be manifested in attempts to preaudit financial transactions. If the contract clearly prohibits such action the problem is usually solved on a policy level. If it does not, the job accountant is usually well advised to resist the first indication of such action.

The line between healthy cooperation and unhealthy interference is sometimes a difficult one to draw. Usually there are considerations of policy beyond the scope of the average job accountant's authority. The temptation is great to hold nonreimbursables to a minimum by having all transactions preaudited. Often the result is delay in operations, damage to credit, and damage to relations with suppliers and even with the client through the activities of an overzealous auditor.

Another accounting problem peculiar to the cost-plus type of contract is the treatment of owner-furnished materials, equipment, or services. If the fee is based on a percentage of cost or the fee increases when extras increase the cost beyond a predetermined percentage of the original estimate, it is usually proper to take the value of owner-furnished items into account to determine the total cost of the work done.

Other contracts combine some of the features of lump sum and cost-plus contracts. The most common of these is the so-called "target" type. Usually the contractor is called upon to submit an initial bid in competition with others. Then the bid, after adjustments arrived at by negotiation, becomes the target that can move upward or downward as a result of change orders, shifts in price and wage rates, and similar factors beyond the contractor's control. There is usually a bonus for doing the job at a cost below the target, and a penalty for running over. Some target-type contracts contain a stop-loss provision limiting penalties to the amount of the fee. Sometimes, too, the target is guaranteed and the penalty is 100 per cent of the overrun. Obviously, everything that has been said above about both the lump sum and the cost-plus types of contracts would apply to this type.

Time-and-material contracts, on the other hand, are much less demanding. Usually they involve smaller jobs and the principal accounting concern is to see that all time paid for by the contractor is billed to the client, and that all materials withdrawn from stock or purchased directly are charged to a job or are returned to stock. In this type of work it is common practice to add a fixed percentage to the billing for overhead and profit. Otherwise it is necessary to increase the prices charged for labor and for material to cover those items.

Forms of business organization

Construction businesses, like other types of business, are generally organized in one of the traditional forms—corporation, partnership, or individual proprietorship. Insofar as accounting problems peculiar to these forms are concerned, the nature of the business is generally not important since the form of business organization affects only those accounts which reflect the proprietor's equity in, and not the operations of the business. One possible exception to this general rule involves corporations. Because of possible personal liability of directors, if there should be a payment of dividends from capital, the method of accounting chosen to account for income from joint ventures and long-term contracts becomes doubly important.

One of the most significant developments in comparatively recent years is the widespread use of the joint venture as a form of organization used for larger projects. Essentially, a joint venture is a special purpose partnership through which two or more construction firms can pool their finances, their bonding capacity, their know-how and their equipment in the performance of a large or hazardous job. The joint venture is an effective risk-spreading device and many are formed for that purpose alone. At other times, joint ventures are used to give promotors or key employees participation in a particular job without participation in the operation of the company as a whole.

For all practical purposes, the construction accountant may properly treat a joint venture as a partnership. There are some technical differences in law and in the past the income tax authorities have sought to tax them as associations taxable as a corporation. Properly used, however, joint ventures are a safe and well-proved device for pooling abilities and facilities and for spreading construction risks. It is rarely good practice to use the same joint venture for more than one job and this is true even though the participants and the interests are the same. Some joint ventures even carry this separation feature to the point of securing separate employer's numbers for social security purposes and other licenses and permits on the same basis.

In most, though not all, states a corporation may enter into a joint venture without specific provisions in its articles. So also, generally speaking, may a partnership, a proprietorship, or another joint venture. Whether a trust may do so usually depends upon the provisions of the trust instrument. The safest procedure is always to discuss the formation of a joint venture with legal counsel.

Most joint ventures maintain separate accounting records, complete with general ledger, and it is usually the duty of job management under the supervision of the sponsor (the managing partner) to keep the members of the venture informed on the progress of the work and the financial position of the venture. Sometimes a management committee consisting of representatives from each member organization takes the place of the sponsor, though under some circumstances this procedure might cause the authorities to view the venture as an association taxable as a corporation, and therefore might be undesirable.

Occasionally, tax considerations permitting, a special purpose corporation may be formed instead of a joint venture, and its corporate officers will probably then be chosen from the several member companies.

During periods of excess profits taxation, construction companies, like many other companies, have tended to avoid the corporate form. Frequently substantial tax savings have been achieved in this way. However, unless the tax cost is prohibitive, the corporate form has generally proved desirable even for very small firms, and for a number of reasons. Corporations are not subject to graduated surtax rates and so, barring excess profits taxes, it makes less difference which year profits are reported. Most of all, construction is a risky business and often the corporate form is the only hedge that individuals have against possible financial disaster.

One common objection offered to the incorporation of a small business is that corporate accounting is much more complicated and costly and that the cost is unjustified. This charge, of course, is simply not true. Accounting for operations is not affected by the form of organization. The only difference is in the method of accounting for the owner's equity and in formalizing decisions of major importance in the minute book. The accountant who advises against the corporate form solely on the ground that it is too complicated and costly to maintain corporate records is, by his own statement, indicating his lack of qualification to express an opinion. Other factors may, in the opinion of competent legal, tax, and accounting advisors, make the use of the corporate form inadvisable; but the cost of corporate accounting and tax reporting, of itself, is normally not such a factor.

A much more important practical problem, and one which becomes more important and more difficult when the business is incorporated, is that which arises from the failure of the proprietor, partners, or principal officers, to realize that firm transactions must be kept separate from their personal accounts, and that no accountant, however skillful, can keep accurate records if all transactions are not disclosed to him.

In this respect, the small one-man or two-man businesses are those which create the greatest problem for the accountant and, of course, ultimately for the owners. Checks may be written to "cash." Incoming checks may be cashed and the money spent with no accounting. Equipment may be purchased with no papers to indicate the complete nature of the transaction. Complicated "side deals" may be made with no indication of their existence and may ultimately be liquidated with the proceeds of collections of which the accountant has no knowledge. In other words, the form of organization, as such, presents no serious problem for the construction accountant. His problem, in the average small construction firm, generally is to secure the minimum data necessary to keep adequate books regardless of the form of organization.

2

Basic Accounting Patterns

Once the pattern of operations has been set, the accounting patterns required to reflect operations fall into three major groups represented by these questions:

1. Where will the accounting be done?
2. What information is needed and why?
3. What is the best way to go about getting it?

At first glance it might appear that the question of what is needed and why should come first. However, it has already been pointed out that many of the functions to be performed by accounting are determined by job location alone. Hence the "where" often has a great deal to do with determining the "what" and the "why."

Centralized and decentralized accounting compared

It has been noted that one of the distinguishing features of the construction industry is that its physical operations cannot be centralized but must, for the most part, take place at the site of the real estate that is being improved. It follows that people at the job site have firsthand knowledge of conditions and occurrences there.

One of the most basic of construction accounting problems is how much to do in the general office. Obviously the answer must vary according to the circumstances of each individual contractor if not with each individual job. It is a fallacy to assume that procedures which worked well for one company or on one job will necessarily work equally well for all contractors or on all jobs. The procedures followed in any successful system are flexible enough to meet a wide variety of conditions without sacrificing any basic controls.

It almost goes without saying that the smaller the job, the smaller the proportion of job accounting that will be done at the job site. On the smallest, only timekeeping and receiving of materials will be done on the job. Repairmen who carry a truck inventory may add a record of materials used. As the jobs grow larger the question of decentralization becomes more important, and more factors affect the decision. What those factors are and how they are applied is covered in Chapter 3. The point here is to recognize the centralization–decentralization decision as one of the basic problems in fitting accounting patterns to operational patterns.

Schedule 2.1 compares centralized and decentralized accounting on the basis of the several control factors involved. It is based on the assumption that the jobs are large enough to justify decentralization and the means of communication are good enough to make centralization practical.

SCHEDULE 2.1/COMPARISON OF CENTRALIZED AND DECENTRALIZED ACCOUNTING

Centralized	*Decentralized*
Financial control	
Financial records can be kept by better trained people under supervision and control of top accounting personnel, and the need for going to the field for additional facts is held to a minimum. Hence there can be more uniformity and greater accuracy.	Job personnel are closer to the facts and therefore are in a better position to have prompt, accurate information. The general office records are no better than the data supplied by the field.

SCHEDULE 2.1/ACCOUNTING SYSTEMS COMPARED (Cont.)

Centralized	*Decentralized*
Cost control	
If volume is great enough to permit cost records to be mechanized, more and better cost statements can be made in the general office, and greater uniformity in presentation of cost statements can be achieved.	Cost statements lose much of their value as tools of job management if they are not completely current. The time required to transmit cost data to the general office, process it, and return it to the field is too great, and cost keeping becomes a useless expense.
Auditing	
The cost of adequate auditing procedures is less when the auditor has all the records in front of him in one place and the responsibilities are centralized.	There can be no adequate audit of operating accounts of a construction company without a thorough understanding of job site conditions; this can not be obtained in the general office.
Reporting	
Financial statements are one of the tools of management and as such must be prompt, accurate, and consistent. Where all accounts are centralized there is no need for delay in securing data from the job; and statements can be prepared by top accounting personnel of the company or by outside accountants without delay and without inconsistencies. If special statements for special purposes are required they may be taken quickly from records at hand without risk of errors in communication.	Over-all financial reports are of limited usefulness to management, and without substantial supporting detail (not readily available in the general office), the statements can be misleading. Properly organized, there need be no delay or inconsistency in reports from the jobs. Special statements usually require data not readily obtainable from the ledgers. Usually such data are more quickly and accurately obtained at the job site.
Job management	
Job management is not a function performed solely at the job site. To utilize top management skills effectively, the general office must get prompt, definitive, current job information.	When job management uses accounting records to control job operations, such records must be completely current to be useful. Usually this precludes centralization because of the necessary transmission time.

SCHEDULE 2.1/ACCOUNTING SYSTEMS COMPARED (Cont.)

Centralized	*Decentralized*
Overhead control	
Centralization permits more specialization, more mechanization, and better supervision. Hence job accounting can be done at lower cost. Also, a more objective view of job site overhead is possible to those not directly concerned, and hence fewer personal elements will enter into overhead reduction measures.	The mere fact that a trained accountant may, in a job office, be called upon to do such routine tasks as typing and filing does not necessarily indicate inefficient use of labor. Normally a capable job accountant combines a large amount of internal checking with these operations. If job management is properly informed it is usually cost-conscious enough to control overhead without help from the general office.

It is clear from Schedule 2.1 that where there is a choice between centralized and decentralized job accounting, persuasive arguments exist on both sides of the question. A more detailed examination of the problems of centralized and decentralized accounting will be found in Chapter 3. At this point it is important only to recognize the question as one involving one of the most basic patterns in construction accounting. Whether he knows it or not, every contractor must recognize this question and deal with it one way or another the first day he starts his operations.

Basic records

One of the important reasons why construction contractors, like all other business concerns, must keep complete and accurate records, is that numerous laws require them. Without such laws many smaller contractors would keep no records at all, and many contractors' records would be less elaborate. Essentially the minimum records required include detailed records of cash receipts and cash disbursements, purchases, income, gross receipts, individual earnings records of employees, and a summary of all these, usually in the form of a general ledger.

Since such a record is required by law it would be wasteful not to use it to the greatest possible advantage. Most accountants and all of the more successful contractors consider the legal requirement as secondary to the need of management for adequate records.

The fact remains, however, that a considerable number of contractors use their records only as a means of satisfying governmental requirements. This group is losing money by failure to make the greatest possible use of something they must pay for in any event.

A mere historical record is limited in usefulness. Of course, reference to individual accounts in the general or subsidiary ledgers is common, particularly to locate original documents connected with some particular transaction or series of transactions. Thus an account in the general ledger might be used to locate the vouchers and other documents necessary to establish the nature of a transaction for income tax purposes. An account in the accounts receivable ledger might be used to prepare a detailed statement of the account for collection purposes. The cost ledger might be used to trace the source of certain materials or supplies, or the purchase record might be used to develop data to secure business on a reciprocity basis. However, the most important use for the basic records is to provide the raw materials for financial statements.

Reporting

The reason for the limited usefulness of the basic records is the fact that they are not necessarily designed to make significant groupings or comparisons. That is the function of reporting—in other words, the financial statements. The mere statement that a construction company has $25,000 in cash means very little by itself. However, if it is stated that the company has $25,000 in cash and $50,000 in current receivables and other current assets, and that its current liabilities total $30,000, the figures begin to be significant.

To the credit man at the lumber yard this would normally mean that the company is in a position to pay its bills currently and that, other things being equal, a reasonable line of credit is probably justified. To the banker and to the bonding company, it would indicate the probability that the company could be reasonably expected to handle a backlog of work of, say, $400,000 to $450,000 without getting into financial difficulties. To the contractor himself it would indicate that if he has much less than $400,000 backlog his money is not working as hard as it should be, and if he has much more than $450,000 backlog he may be overextending himself.

Naturally the significance of the amounts involved will vary with all of the circumstances and will not depend solely on current position. It is for the financial statements to bring out all the significant facts essential to a proper evaluation of the company's current position and the results of its operations.

Suppose, however, that the company referred to above were a subcontractor working on lump sum contracts, and that included in the $50,000 current receivables were $30,000 in retained percentages due from prime contractors. If the subcontractor could not expect to be paid for these retentions until the prime contractors were paid their retentions by the owners, then the subcontractor's funds would be partially frozen, so that he might have only $15,000 in net working capital available. Naturally, the volume of work that he might take on successfully would be reduced proportionately. On the other hand, the volume of work that the contractor could undertake would not be greatly affected if all his contracts were on a cost-plus-fixed-fee basis using owner-furnished revolving funds.

Thus, it is the function of the balance sheet to give, as well as possible, a fair summary of the assets and liabilities of the business at a given time. It is the function of the operating statement to give a fair summary of the results of operation during a given period. In support of these two basic statements there must be adequate schedules to detail and explain all the important facts and relationships necessary to evaluate the two basic statements correctly.

The questions of what statements are required and how they are constructed are covered in Chapter 16. The important facts to be brought out here are these:

1. The information that appears on a financial statement is determined by the use to which the statement will be put.
2. It is a major responsibility of management to utilize its financial reporting to the greatest possible advantage.
3. It must be recognized that financial statements report only past facts; the usefulness of those facts diminishes with time. In other words, conditions change quickly in the construction business, and a statement so old that it may be misleading may be worse than no statement at all.

Forecasting

A balance sheet is, to some extent, itself a forecast. When the person preparing the balance sheet classifies certain assets as "current," he is predicting that they will be converted into cash within a reasonably short time—usually one year. He is predicting, as a rule, that the excess of costs over progress billings represents an asset and not a loss; and when he makes provision for taxes he is predicting that the tax returns will be accepted substantially as filed.

It is on the basis of the balance sheet, the operating statement, and the analysis of jobs in progress that the banker forecasts the need of

SCHEDULE 2.2/CASH FORECAST

ECKS CONSTRUCTION CO.
CASH FORECAST FOR THE SIX MONTHS ENDING
JUNE 30, 19—

Expected Available Cash:	*Jan.*	*Feb.*	*Mar.*	*Apr.*	*May*	*June*	*Total*
Cash balance Dec. 31	$10,000						$ 10,000
Monthly balances brought forward		$ 7,500	$ 6,500	$ 6,500	$ 7,500	$ 7,500	
Expected receipts:							
Job A—retention		5,000					5,000
B—fee	1,000	1,000	1,000				3,000
C—progress payments			9,500	12,000	15,000	6,500	43,000
D—progress payments	6,000	3,000					9,000
D—retention					2,500		2,500
E—progress payments		2,000	5,000	10,000	10,000	4,000	31,000
F—fee	500	500	500	500	500	500	3,000
Insurance claim				4,500			4,500
Warehouse scrap sales	500						500
Total cash before bank loans	$18,000	$19,000	$22,500	$33,500	$35,500	$18,500	$111,500
Bank loans	5,000	10,000	7,500				22,500
TOTAL EXPECTED CASH	$23,000	$29,000	$30,000	$33,500	$35,500	$18,500	$134,000

Expected Cash Requirements:	*Jan.*	*Feb.*	*Mar.*	*Apr.*	*May*	*June*	*Total*
Job B—None (revolving fund)							
C—Costs		$ 4,000	$12,000	$ 4,000	$ 3,000	$ 5,000	$ 28,000
D—Costs	$ 4,000	2,000					6,000
E—Costs	6,000	5,000	7,000	6,000	6,000		30,000
F—None (revolving fund)							
G—Costs					4,000	3,000	7,000
Equipment payments	2,000	2,000	2,000	2,000			8,000
Taxes	1,000			1,500		1,500	4,000
Insurance		7,000					7,000
Overhead	2,500	2,500	2,500	2,500	2,500	2,500	15,000
SUBTOTALS	$15,500	$22,500	$23,500	$16,000	$15,500	$12,000	$105,000
Loan repayments				10,000	12,500		22,500
TOTAL CASH REQUIRED	$15,500	$22,500	$23,500	$26,000	$28,000	$12,000	$127,500
Cash balance carried forward	$ 7,500	$ 6,500	$ 6,500	$ 7,500	$ 7,500	$ 6,500	$ 6,500
Total loans due to bank	$ 5,000	$15,000	$22,500	$12,500	—	—	—

his construction client for short-term loans and his capacity to repay them. On the basis of the same statements, the bonding company and prospective clients of the contractor predict his ability to finance the work he is undertaking. The contractor himself uses the same statements to forecast how much new work he is in a position to contract for and where he will get the money, equipment, and organization to handle it.

However, since these statements reflect the past only, the next step in the forecasting procedure is for the contractor to adjust his statements to take into account the reasonable expectations for the future. The most common forecast of this type is the cash forecast.

Cash forecast: To make a cash forecast it is necessary to estimate, usually by months, the times when progress payments may be expected and when any cash from other sources will be available. It is also necessary to anticipate the cash requirements of known work, overhead, taxes, equipment purchases, and loan repayments. Schedule 2.2 is a brief example of one of several satisfactory forms of cash forecast.

There are contractors who maintain that such forecasts are a waste of time because they become obsolete before they are prepared, because the collectibility of payments is not predictable, and because they mislead the reader by anticipating funds not actually on hand. All of these objections miss the point. The type of cash forecast illustrated accomplishes two things: (1) It inventories cash resources and balances expected needs against them; (2) It schedules the work that must be done and the collections that must be made if money is to be on hand to pay the bills.

Such cash forecasts, as used by progressive construction companies, are made quickly, because they do not seek to achieve more than approximate accuracy. However, they must be made by someone who knows conditions and who recognizes the forecasts for what they are —a financial plan to be followed as nearly as possible and to be varied when necessary. On the basis of such a forecast it is possible to estimate what short-term loans will be needed and how and when they will be repaid. With this type of forecast to show the banker, it will be easier for a deserving borrower to get the needed credit. If there is reason to believe that the collection of the expected funds will be slow, the forecast will call attention to the need for greater collection effort.

The expected availability of cash may make a great deal of difference in the way new work is estimated. If adequate working capital will be available, the contractor may bid more lump sum work. If working capital is likely to be tied up for some time, he may try to convert some of his lump sum bids to fixed-fee jobs with guaranteed maximum prices and financed by a client-furnished revolving fund. If work is scarce and jobs in progress are approaching completion he might bid more competitively and on a lower margin in anticipation of being able to finance the work with funds from jobs closing out.

Some cash forecasts are based on types of work rather than on individual jobs. Thus the captions for receipts might be something like "Contract work," "Maintenance work," "Repair jobs," and so on, and for expenditures, such items as "Payrolls," "Purchases," and "Taxes." In some types of construction businesses this is the only practical way. However, where a number of jobs are in progress over several months, the form shown in Schedule 2.2 has the advantage of providing a review of completion schedules at the same time that the forecast is being prepared.

There are three important limitations to the use of such a forecast. First, it is no more accurate than the thinking that goes into it. Therefore it is not a mere juggling of figures to be assigned to anyone who has nothing better to do. It is a monthly review of the immediate past and the best estimate of the course of the business for the immediate future. When it is being prepared, the best combined thinking of management together with its outside accountants and financial advisers is brought to bear on the immediate financial problems of the company. If the cash forecast is not prepared in this way it loses much of the meaning it should have, and may, in fact, become as misleading as its critics charge.

Second, it must be remembered that a forecast guarantees nothing. The money expected will arrive only if the thinking that accompanied the forecast is translated into effective action. There is a strong temptation, particularly when a bank loan is being sought, to indulge in wishful thinking and overly optimistic guessing. This may work once but if the figures do not prove to be reasonable, the banker will tend to doubt all the contractor's estimates in the future. This could be disastrous to credit, and since the banks and bonding companies usually work very closely together it might well hurt the contractor's bonding capacity. Cash forecasting requires the same hardheaded realism as bidding. Excessive optimism in either can lead to serious trouble. On the other hand, careful, conservative forecasting can be one of the most useful tools of financial management.

Third, a cash forecast is not necessarily indicative of profit or loss. A contractor may have a great deal of highly profitable work in process and still be very short of cash. In fact, he is often in that position. An expanding business works its money very hard and working funds do not stay any longer in the bank account than working equipment stays in the contractor's yard. For purposes of tax planning and the long-range planning of operations, the proper procedure is to employ the "profit-and-loss" or "operations" forecast.

Profit-and-loss or operations forecast: The forecast of profit and loss is not commonly used by smaller contractors because it is based, essentially, on the concept of a "break even" point. In manufacturing and marketing the break even point is that volume of sales which will produce enough gross profit to pay the fixed overhead expenses. In construction, the volume of job revenue tends to vary more and to be subject to greater fluctuations in the rate of gross profit than the sales of a manufacturing or marketing business. The concept is, therefore, harder to apply to construction. One notable exception is the builder of tract housing whose operations, in many respects, are similar to those of a manufacturer. Another such exception is the plumber or electrician who does a large volume of small maintenance jobs. These operations are similar to a retail marketing business. For the most part, however, construction companies tend to have less predictable fluctuations both in volume of business done and in gross profit.

Nevertheless, in a market where there is a reasonable amount of available business, and assuming a reasonable degree of skill in estimating, the principal factors limiting the volume of a contractor's business are the amount of his capital and the size and ability of his organization. If recognition is given to these two factors, a contractor may, by comparing the results of past operations with a sound estimate of present and future conditions, arrive at a reasonable estimate of the volume of work which he can reasonably expect to complete and the average gross profit which he can reasonably expect that amount of work to produce. In fact, some contractors start their profit and loss forecasting with an estimate of expected annual gross profit. Others estimate gross profit in terms of a stated number of dollars per permanent employee.

To illustrate a somewhat more conventional approach, assume a building contractor finds that over the past several years he has been able to earn net job revenue (gross profit) averaging 6 per cent on total job revenue (contract price of completed work). Assume further that his estimate of the market for the coming year combined with the capacity of his organization and the amount of available working capital lead him to believe that he can complete $1 million in contract volume and make an average of 6 per cent gross profit on it. On the basis of these assumptions, the contractor must keep his overhead under $60,000 if he is to make a profit.

This sort of planning requires a very high degree of management skill and usually the best of outside advice. Once the technique is mastered, however, it enables the contractor to use his available resources to the greatest possible extent and to the greatest possible advantage. To make such estimates the first requirement is accurate financial statements prepared on a consistent basis over a period of several years. The second, and equally important requirement, is a record of past forecasts and the amounts and reasons for their variations from actual operating results. The third requirement is a sound analysis of existing and future market conditions coupled with sound planning for making the most of them. Combining these three elements, a sound and conservative management can forecast operating results with a high degree of accuracy and in so doing can develop the information necessary to plan the most effective use of its organization, equipment, and capital.

Basic methods compared

In theory, the distinctions between the basic accounting methods used by construction companies are fairly simple. Under the cash method, income is taken into account when it is received and costs and expenses are taken into account when they are paid. Under the accrual method, income is taken into account when it is earned regardless of when it is received and costs and expenses are taken into account when they are incurred regardless of when they are paid. Under the percentage-of-completion variation of the accrual method, income is determined by applying the estimated percentage of completion on each job to the estimated net job revenue. Costs and expenses are taken into account as in the accrual method. Under the completed-contract variation of the accrual method, the contract revenue and the contract costs are accumulated for each job and the difference between the two is taken into account as profit or loss when the job is completed. In practice, unfortunately, the distinctions between these basic systems lose much of their simplicity, and hybrid methods are common.

The cash method: There may be some construction businesses to which the pure cash method is applicable, but they are very rare. The jobs would have to be very small and the receivables, equipment, and inventories minute. Many firms, however, use a modified form of cash method which follows the federal income tax regulations. Under that method most income and expense items are determined on the basis of cash receipts and disbursements. Purchases of equipment and certain other items (such as insurance policies affecting more than one year), however, are not charged to expense but are treated as assets ("capitalized" to use the accounting term), and only the depreciation or "amortization" charged to cost. Equipment purchased on a chattel mortgage or conditional sales contract is considered to be fully owned and the liability is recognized and taken into account on the books. If the jobs are small and are done for cash; if there is little or no inventory; and if equipment is not an important factor, the cash method, as so modified, is simple and effective. However, for the average construction business it is neither economical for tax purposes nor adequate for business purposes.

The accrual method: For the majority of construction businesses, the accrual method is the most (if not the only) acceptable method. Companies with long-term contracts may use one of the special variations: percentage-of-completion or completed-contract. Basically the problem is one of matching costs and expenses against the revenue to which they are most closely related.

The courts have occasionally confused this basic concept by holding that income, even though earned, and costs, even though incurred, are not accruable until a legally enforceable claim has arisen. Thus, a retained percentage, though fully earned and accruable by accounting standards, would not be accruable under the rule of some of the cases until it became due and payable under the contract. By the same reasoning, it would seem to follow that a liability, though fully incurred, would not be accruable until the time for immediate performance had arrived. Obviously, while such standards may be acceptable at law, they would, if applied consistently in accounting, destroy much of the value of a company's financial statements. The accounting test of matching revenues with the related costs is the only practical one from a business viewpoint.

Thus, it is not unusual to see in the current asset section of a construction company's balance sheet such items as "Amounts earned but unbilled." For a contractor doing unit price work this entry might represent the billing price of units completed by the end of the accounting period but not billable until after the end of the period. On a lump sum job it might represent the progress payment which would be due if percentage of completion had been computed to the end of the accounting period instead of at some date prior to the end of the month. Where such practice is followed, the related costs would be included in the "Cost of operations" section of the operating (profit and loss) statement.

Some companies prefer to take into account as job revenue only the amounts actually billable during the accounting period. The balance sheet treatment then would depend upon whether billings or costs are greater. If billings exceed costs, the amount of the excess should appear in the current liability section of the balance sheet under some such caption as "Excess of contract billings over related costs." If costs exceed billings, the excess should appear in the current asset section of the balance sheet under some such caption as "Excess of job costs incurred over related progress billings." Of course if there is a known loss it should be taken up in the accounts. The amount to be taken up should be the total amount of the known loss, even though some of it may not yet have been actually incurred, on the theory that any foreseeable loss should be recognized immediately.

Whatever the detailed mechanics of the accounting may be, the underlying principles are these:

1. Income is to be recognized when earned or when billable.
2. Costs and expenses are to be recognized when incurred.
3. Income and the related costs and expenses are to be taken into operating results in the same accounting period.
4. All known losses are to be fully provided for in the period in which they become determinable with reasonable certainty.

Variations of accrual method: The terms "completed-contract-method" and "percentage-of-completion-method" are likely to appear in any discussion of construction accounting. Essentially they are variations of the accrual method of accounting designed to account for operations under long-term contracts of the lump sum or sometimes the unit price type. Their use arises from the fact that any particular job may continue over two or more accounting periods, and it is necessary to determine the period in which the income from the job will be taken into account.

More often than not there is very little relation between amounts billed to owners and actual earnings. For example, it is almost universal practice for contractors to receive progress payments as their jobs progress. Sometimes these payments aggregate less than the costs incurred in order to give the owner protection against defaults and liens in addition to the customary retained percentage. At other times an owner will provide for the cost of mobilization and move-in and also provide the contractor with working capital by permitting progress billings substantially in excess of those which would be allowable strictly on the basis of materials placed or units of work actually completed.

As a practical matter, payment on the basis of physical units actually completed is more fiction than fact. Almost invariably, partially completed units are averaged out to determine the basis for progress payments on a unit price contract. Sometimes, too, mobilization and other preparatory costs incurred on unit price contracts are reimbursed on the basis of billing stated in terms of units though no actual units have been completed. On lump sum contracts the same result is frequently obtained by permitting billings on the basis of percentages of completion not justified by physical progress alone.

Because, as a practical matter, the customary rules of accruing income on the basis of billings to the owner so rarely provide a proper measure of earnings, the two principal variations (completed-contract and percentage-of-completion) have become so generally accepted that they are, in themselves, spoken of as separate accounting methods instead of as mere variations of the accrual method.

The American Institute of Certified Public Accountants has given a simple, understandable, and highly authoritative description of the completed-contract method and the percentage-of-completion method of accounting for long term contracts of the construction type. It is presented here as Schedule 2.3.

SCHEDULE 2.3/LONG-TERM CONSTRUCTION TYPE CONTRACTS

American Institute of Certified Public Accountants, Accounting Research Bulletin No. 45

1. This bulletin is directed to the accounting problems in relation to construction type contracts in the case of commercial organizations engaged wholly or partly in the contracting business. It does not deal with cost-plus-fixed-fee contracts, which are discussed in Chapter 11, Section A, of *Accounting Research Bulletin No. 43,* other types of cost-plus-fee contracts, or contracts such as those for products or services customarily billed as shipped or rendered. In general the type of contract here under consideration is for construction of a specific project. While such contracts are generally carried on at the job site, the bulletin would also be applicable in appropriate cases to the manufacturing or building of special items on a contract basis in a contractor's own plant. The problems in accounting for construction type contracts arise particularly in connection with long-term contracts as compared with those requiring relatively short periods for completion.

2. Considerations other than those acceptable as a basis for the recognition of income frequently enter into the determination of the timing and amounts of interim billings on construction type contracts. For this reason, income to be recognized on such contracts at various stages of performance ordinarily should not be measured by interim billings.

GENERALLY ACCEPTED METHODS

3. Two accounting methods commonly followed by contractors are the percentage-of-completion method and the completed-contract method.

SCHEDULE 2.3/LONG-TERM CONTRACTS (Cont.)

Percentage-of-completion method

4. The percentage-of-completion method recognizes income as work on a contract progresses. The committee recommends that the recognized income be that percentage of estimated total income, either:

(a) that incurred costs to date bear to estimated total costs after giving effect to estimates of costs to complete based upon most recent information, or

(b) that may be indicated by such other measure of progress toward completion as may be appropriate having due regard to work performed.

Costs as used here might exclude, especially during the early stages of a contract, all or a portion of the cost of such items as materials and subcontracts if it appears that such an exclusion would result in a more meaningful periodic allocation of income.

5. Under this method current assets may include costs and recognized income not yet billed, with respect to certain contracts; and liabilities, in most cases current liabilities, may include billings in excess of costs and recognized income with respect to other contracts.

6. When the current estimate of total contract costs indicates a loss, in most circumstances provision should be made for the loss on the entire contract. If there is a close relationship between profitable and unprofitable contracts, such as in the case of contracts which are parts of the same project, the group may be treated as a unit in determining the necessity for a provision for loss.

7. The principal advantages of the percentage-of-completion method are periodic recognition of income currently rather than irregularly as contracts are completed, and the reflection of the status of the uncompleted contracts provided through the current estimates of costs to complete or of progress toward completion.

8. The principal disadvantage of the percentage-of-completion method is that it is necessarily dependent upon estimates of ultimate costs and consequently of currently accruing income, which are subject to the uncertainties frequently inherent in long-term contracts.

Completed-contract method

9. The completed-contract method recognizes income only when the contract is completed, or substantially so. Accordingly, costs of contracts in process and current billings are accumulated but there are no interim charges or credits to income other than provisions for losses. A contract may be regarded as substantially completed if remaining costs are not significant.

10. When the completed-contract method is used, it may be appropriate to allocate general and administrative expenses to contract costs rather than to periodic income. This may result in a better matching of costs and revenues than would result from treating such expenses as periodic costs, particularly in years when no contracts were completed. It is not so important, however, when the contractor is engaged in numerous projects, and in such circumstances it may be preferable to charge those expenses as incurred to periodic

income. In any case there should be no excessive deferring of overhead costs, such as might occur if total overhead were assigned to abnormally few or abnormally small contracts in progress.

11. Although the completed-contract method does not permit the recording of any income prior to completion, provision should be made for expected losses in accordance with the well-established practice of making provision for foreseeable losses. If there is a close relationship between profitable and unprofitable contracts, such as in the case of contracts which are parts of the same project, the group may be treated as a unit in determining the necessity for a provision for losses.

12. When the completed-contract method is used, an excess of accumulated costs over related billings should be shown in the balance sheet as a current asset, and an excess of accumulated billings over related costs should be shown among the liabilities, in most cases as a current liability. If costs exceed billings on some contracts, and billings exceed costs on others, the contracts should ordinarily be segregated so that the figures on the asset side include only those contracts on which costs exceed billings, and those on the liability side include only those on which billings exceed costs. It is suggested that the asset item be described as "Costs of uncompleted contracts in excess of related billings," rather than as "Inventory" or "Work in process," and that the item on the liability side be described as "Billings on uncompleted contracts in excess of related costs."

13. The principal advantage of the completed-contract method is that it is based on results as finally determined, rather than on estimates for unperformed work which may involve unforeseen costs and possible losses.

14. The principal disadvantage of the completed-contract method is that it does not reflect current performance when the period of any contract extends into more than one accounting period and under such circumstances it may result in irregular recognition of income.

Selection of method

15. The committee believes that in general when estimates of cost to complete and extent of progress toward completion of long-term contracts are reasonably dependable, the percentage-of-completion method is preferable. When lack of dependable estimates or inherent hazards cause forecasts to be doubtful, the completed-contract method is preferable. Disclosure of the method followed should be made.

COMMITMENTS

16. In special cases disclosures of extraordinary commitments may be required, but generally commitments to complete contracts in process are in the ordinary course of a contractor's business and are not required to be disclosed in a statement of financial position. They partake of the nature of a contractor's business and generally do not represent a prospective drain on his cash resources since they will be financed by current billings.

Two of the committee members felt the provisions for losses should be made only by footnotes to the financial statements. One of the committee members would not segregate contracts in which billings exceed costs from those in which costs exceed billings.

Schedule 2.3 does not deal with special accounting problems arising from cost-plus-fixed-fee contracts, and refers specifically to Chapter 11, Section A, of *Accounting Research Bulletin 43* for the principles to be applied to fee work. The applicable portion of this bulletin lists the four most important problems in accounting for cost-plus-fixed-fee contracts:

> (a) When should fees under such contracts be included in the contractor's income statement?
>
> (b) What amounts are to be included in sales or revenue accounts?
>
> (c) What is the proper balance sheet classification of unbilled costs and fees?
>
> (d) What is the proper balance sheet treatment of various items, debit and credit, identified with cost-plus-fixed-fee contracts?

The most common practice, and the one often insisted upon by the Internal Revenue Service, is to accrue the fees on cost-plus-fixed-fee contracts in the period when they become billable. The reason is that most cost-plus-fixed-fee contracts are so written that the risk of losing the fee is virtually negligible. However, where there is (as in some target type contracts) a chance that the fee may be lost through operation of a penalty clause, then there is very strong authority to support deferring any recognition of income from current payments on the fee until the contract is completed, or substantially so. The *Bulletin* summarizes it in this way:

"Judgment must be exercised in each case as to whether accrual of the fee when billable is preferable to accrual on the usual basis of delivery or of percentage of completion otherwise determined."

The second of the four problems listed in *Bulletin 43* has to do with how much to accrue. There would appear, in general, to be three possibilities. First, to take into account only that portion of the fee which will be received currently. In other words, if the fee were subject to a 10 per cent retention, only 90 per cent would be accrued. This is not the usual treatment and would normally be used only when there is a good chance that the retained percentage will not be collected. Second, it is the usual practice in maintenance and service contracts where total volume is not important, to accrue the full amount of the fee which is billable even though some portion of it may be retained by the owner until completion or for some guarantee period. Third, and most satisfactory for most construction companies operating on a cost-plus-fee basis, is to take into revenue the entire amount billed or billable including reimbursable costs. The reason for this is obvious. Total volume is significant to the construction contractor in a number of different ways and therefore is the sort of thing which should be directly reflected in the records.

Unbilled costs and fees should appear on the construction contractor's balance sheet as receivables and not as inventory or as an advance. They should be set out separately under some such caption as the following:

Unbilled amounts due on cost-plus-fixed-fee contracts:
  Fees earned
  Reimbursable costs

In the current asset and current liability sections of the balance sheet, amounts due to the owner under a cost-plus-fixed-fee contract should be shown separately from amounts due from the same owner. Offsetting is so rarely proper that it is preferable to establish a policy of showing the current receivables separately from the current payables and advances. If offsetting is applied, however, the amounts offset and their general nature should be disclosed.

Hybrid methods: Frequently the work of a construction company will include some cost-plus-fixed-fee work, some lump sum and unit price work of a type that justifies the use of percentage-of-completion accounting, and some other work of a type to which the completed-contract method is applicable. So long as the books and the financial statements clearly reflect the facts and the methods used, and so long as the methods are consistently followed, there can be no reasonable objection to such procedure. In fact, the contractor has a legal duty to keep his records so as to reflect income clearly, and certainly one of the requirements for the clear reflection of income is the selection of accounting methods most applicable to the operation to be accounted for. However, indiscriminate hopping from one method to another, merely to gain a temporary tax advantage or to show a better financial statement to the bank or bonding company, is an invitation to serious trouble. Only a very real and substantial change in conditions will justify changing a method once it is adopted, and even then the Commissioner of Internal Revenue may not permit the changed method to be used for tax purposes.

Income tax implications: It has long been a requirement of the federal income tax regulations that the accrual method must be used if inventories are a substantial income-producing factor. This requirement immediately raises the question of the nature of construction work in progress. Many accountants treat it as an inventory item because it is comparable in many ways to the work-in-process of a manufacturing concern. However, because construction work usually consists in improving the real property of some other person, legal title to the partially completed construction work is generally considered to vest in the owner of the real property. Sometimes, as in U.S. government contracts, passage of title to the work and materials is spelled out in the contract. The technical result of this difference is to change the nature of the contractor's asset from an inventory item to a receivable protected by lien rights (or other comparable statutory rights).

The effect of this distinction on a contractor reporting on the modified cash method permitted for tax purposes is apparent. So long as he has no substantial inventories of materials or supplies he would be in technical compliance with this portion of the regulation. Other factors, such as the effect of individual state laws or the needs of the business for more accurate financial statements must, of course, be considered. Most important of all, in terms of tax effect, is the possibility that a cash basis taxpayer may find income pyramiding in a single year with losses or very low income in the preceding or following years.

The federal income tax regulations and those of most of the states which have income taxes, provide that the completed-contract and percentage-of-completion methods of reporting income may be used only for contracts of more than one year's duration. Technically speaking, this precludes most small contractors from using them. If such contractors cannot, or prefer not to report on the so-called cash method, they are forced to report on the accrual method without modification. As a practical matter, the taxing authorities frequently accept the use of the long-term contract methods for contracts running for less than one year if the practice is consistent and no serious distortions result.

If there are no distorting factors such as unbalanced bids, unbalanced payment schedules, mobilization payments, or inflated percentages of completion, it is common to find the results of the ordinary accrual method similar to the accrual method applied with the percentage-of-completion variation. The reason is that many contracts call for the computation of progress payments on the basis of a percentage of completion. It is also common for contractors who report on the accrual method without the long-term contract variations to ignore the legal niceties governing the year in which retained percentages are includible in income and again, as a practical matter, such treatment is accepted by the taxing authorities if it is consistently followed and no material distortions result.

Taxable income frequently differs from book income, and there is no reason why they must coincide. Nevertheless, where it can properly be done, there are considerable advantages in keeping the two as close together as possible. Not the least of these advantages is that some revenue agents mistakenly believe that it is required. More important, however, is the fact that the closer taxable income approaches book income, the easier it is for actual or potential tax liabilities to be checked and for anyone not familiar with the company's detailed tax position to reconcile tax provisions with the income shown.

Generally speaking, among contractors who have the choice, the percentage-of-completion method has been preferred for tax purposes, principally because of the impact, in recent years, of the excess profits tax on corporations and of the steeply graduated surtax rates on individuals. Apologists who shrink from the idea of accounting methods being chosen for tax purposes alone hasten to point out that wide distortions in income arising from the use of the completed-contract method may be avoided by using the percentage-of-completion method. It may be questioned whether uniformity for its own sake is a desirable goal. However, heads of companies with outside stockholders unfamiliar with the construction business point to an extremely important nontax advantage in keeping the flow of income as uniform as possible. It saves time and trouble in stockholders meetings when lengthy explanations of variations in net income can be avoided.

The problem, of course, lies in the fact that the annual determination of income is virtually a cornerstone in our income tax structure. As applied to a large segment of the construction industry, the concept is totally unrealistic. There are very few construction men who will not admit privately that there is no real profit until a job is completed. It is true that interim profits on certain types of construction work can be estimated quite accurately provided the individual contractor has the personnel and the records necessary to make such estimates possible. It is equally true, however, that percentage-of-completion reporting for tax purposes can be an invitation to wishful thinking and provide fertile ground for an opportunistic type of so-called tax planning that frequently gets the planners into serious tax trouble.

If a construction company is incorporated and its net taxable income is not likely to fall below the $25,000 maximum surtax exemption, there is a great deal to be said in favor of the completed-contract method. One important consideration is the fact that often a good share of the profit is tied up in the retained percentage, and now that corporate income taxes are (at least for the larger companies) on a pay-as-you-go basis, it may be quite important to be able to pay the tax out of the cash which represents the profit. On the other hand, when there is a loss it is frequently possible to time it in such a way as to offset a large gain on another job.

One other factor, which is only indirectly related to taxes, nevertheless deserves mention at this point. It has been mentioned that it is desirable to keep the book income and the income for tax purposes as close together as reasonably possible and that the tax returns be prepared by the same method that is used for the financial statements. If the method chosen is the completed-contract method, there is somewhat less tendency on the part of management to spend, prematurely, profits that are still tied up in jobs.

Probably the most important observation that can be made about the tax effects of accounting decisions in a construction company is that taxation is a highly specialized business and very few construction companies have people on their staffs competent to make decisions affecting taxes. Even if a company does have a tax man on its staff, he usually needs the help of outside specialists to check his thinking. The most costly saving a construction company can make is to skimp on job supervision. The second most costly saving is that made by failure to employ thoroughly competent tax counsel on a retainer basis for year-round consultation.

3

Centralized or Decentralized Accounting

In Chapter 2 it was pointed out that one of the first decisions a contractor must make is how much of his record keeping will be done at the job site and how much in the general office. This chapter describes the more important factors that influence the decision.

Chapter 2 also indicates that for most small contractors centralized accounting is the only practical answer, but this does not mean that the small contractor should forget the possibility of decentralization. First, his operations might grow, as many have, to the point at which decentralization is practical and sometimes even desirable. Second, he might get a single large job which, because of distance, bonding requirements, tax considerations, or other special conditions, would need to have separate accounting. If his accounting system is properly designed, then such unusual situations can be handled without any drastic changes, or the use of any untried or unfamiliar procedures. Third, even though the individual jobs of a smaller contractor may be too small and too close to the office to justify separate job accounting, it is not uncommon to see contractors in the smaller towns opening branch offices in neighboring towns. When that happens the smaller contractor will have to face the same problems and consider the same facts as he would if he were one of the largest contractors opening an office in a new location.

If decentralization of a single job or the opening of a branch office requires basic changes in accounting forms or procedures, then the accounting system lacks the necessary flexibility and there is a good chance it is inadequate in other respects. Preparation of payrolls offers a good illustration. Decentralization would probably have some effect on who does the work, where it is done, and the flow of paper from the job to the paymaster and back. It should not affect the uses to which that information is put, and it probably should not require any substantial changes in the forms on which it is recorded. If these basic procedures would be affected by decentralization, then the contractor, large or small, would do well to call in his outside accountant for a review of his accounting system.

Physical considerations

Ease of communication is the main physical factor affecting the decision to decentralize the accounting for a given job. If there is overnight mail service, good telephone service, and the job is not over two hours from the main office by automobile, then there is little need to decentralize for physical reasons. The longer the lines of communication become, the more individual accounting functions will need to be taken out of the main office and performed at the job site The first functions to be moved are timekeeping and materials receiving. These are followed closely by job site preparation of final paychecks for employees who are being laid off. The next to follow is the preparation of the entire payroll, and then the preparation of the vouchers and checks for payment of current accounts with vendors, subcontractors and others. The last accounting function to be decentralized is almost invariably the keeping of the general ledger and the preparation of the financial statements.

Organizational considerations

The effect of decentralized accounting on the contractor's organization raises several questions. The first of these is incentive compensation for key men. Some contractors have a policy of paying bonuses to job site personnel based on the results of the individual job. If this procedure is followed there are strong psychological advantages in having a separate set of books for each job.

The second question concerns the caliber of personnel required. Generally speaking a higher caliber staff must be employed on a decentralized job, and this requirement means more money spent on salaries. For example, in a one-man job office, the job accountant must be a much more capable and versatile man than his head office counterpart. He is expected to be able to do anything from composing and typing letters to setting up and operating a complete set of general accounting and cost records. He must be able to set up and operate a filing system and, if need be, a warehouse. He must know enough about taxation, labor relations, banking, subcontract administration, and commercial law to recognize problems in those fields when he sees them. Most of all he must be enough of a diplomat to get cooperation from the project manager, superintendent, engineers, and foremen who, all too often, are inclined to look on office activities as "nonproductive overhead" and upon the office personnel as "mere clerks."

This last fact raises one of the most difficult organizational problems in the whole field of construction accounting. There must be, on every job, one man who is fully responsible for that job; and that man must have authority matching his responsibility. It is inevitable, too, that the man in charge, regardless of his title, must be a construction man above all else. If he has a working knowledge of business management, that is helpful, but incidental. If he does not have a knowledge of business management, and is aware of that fact, a strong job office manager can cure the deficiency. If he is not aware that he does not know as much about accounting as he does about construction, the job accountant is in for trouble.

The job accountant can be only as effective as the man in charge will permit him to be, and that is always a factor to evaluate in deciding whether to decentralize job accounting. Some construction firms try to make the job accountant responsible to the general superintendent (or project manager or chief engineer) in administrative matters and to the controller or chief accountant in functional matters. All too often this arrangement merely means that the job accountant has two bosses. It can place him in an impossible position if the project manager or general superintendent is trying to make his job look good on paper without too much regard for the accuracy of the records. Sometimes the lack of proper personnel will require centralized accounting for a job which, by all other standards, should be decentralized.

Administrative considerations

One of the greatest advantages of decentralized job accounting is that (in theory at least) it places on the job someone capable of taking over innumerable administrative duties that the man in charge would otherwise have to perform. In so doing, a larger part of the top man's time and energy is free to be used on the actual construction work, where he is best qualified.

Another administrative consideration affecting the decision on decentralized accounting arises only in connection with the cost-plus type of contract. It is usually hard to get reimbursment on a cost-plus job for the accounting and office work done in the contractor's main office. On the other hand, the cost of work done at the job site is rarely, if ever, questioned. Therefore, many cost-plus jobs on which centralized accounting and office work would actually be more efficient are decentralized solely because the client refuses to pay for proper job costs if they happen to be incurred in the contractor's main office instead of in the field office.

Whether to decentralize job accounting often depends on the answers to these three questions:

1. Will it cost more to decentralize?
2. If so, how much more?
3. If we should decide to do it, what do we get for the extra money spent?

The answer usually is that it does cost more for the actual accounting work when it is decentralized. How much more is a hotly debated question. It is variously estimated that the additional cost ranges from a small fraction of 1 per cent to 10 or 15 per cent. If the additional cost is to be justified at all it must be done on the basis of greater management control, which is made possible by having accounting figures available at the job site more quickly.

Viewed in this light it might well be that, in bidding a $1 million job of stripping the topsoil from a mineral deposit and dumping it in a nearby canyon, a contractor would make no allowance for job site accounting, while the same contractor might put money into his bid to pay for a job accountant on a $250,000 civilian housing job at a distant army installation.

Relative cost

It is a matter of common experience that when a large enough volume of routine work can be concentrated in one place, it can be done on a mass production basis, and unit costs are decreased. This principle is just as valid for accounting routine as it is for any other kind. One of the first steps in reducing the cost of such routine is the intelligent application of laborsaving machines.

Occasionally there is a single job that is large enough so that the volume of accounting routine can be handled more economically by machines. More often, however, it is necessary to centralize the accounting routines from a number of jobs in order to have enough of a volume for efficient mechanization.

The possible saving in cost by being able to use less highly trained help in the centralized system has already been mentioned under the heading "Organizational considerations." With each added employee, the need for versatility decreases. Each employee can be a specialist at a small part of the work and the possibility of using less expensive help without loss of efficiency is proportionately increased.

Still another factor to consider in estimating the comparative cost of centralized and decentralized accounting is the cost of interruptions and the related cost of finding and correcting errors in record keeping. The two are mentioned together because, while interruptions tend to slow down work, their principal cost is in the errors they cause. To anyone familiar with the operation of a one-man job office the mere mention of interruptions is enough. Needless to say, a clerk doing a specialized job in a central office will not be interrupted so often nor for such long intervals as the field accountant in a one-man job office.

One word of caution, however, in evaluating the cost of interruptions and the errors they cause. Most of the matters that interrupt the work of the field accountant and cause him to make errors must be handled by someone. It is possible that by moving the accountant into the general office, these interruptions will be passed on to the project manager, the superintendent, or the job engineer. If, by reason of the same interruptions, these men make errors, it is quite possible that job completion will be delayed or its cost increased. Usually, however, this danger can be overcome by having a combination timekeeper, materials checker, and field clerk to handle most of the routine telephone calls and job visitors.

Generally speaking, if the following questions can all be answered "yes," the chances are good that mechanization of a centralized accounting system will prove profitable:

1. Does the company's work, on the whole, lend itself to centralized accounting?
2. If the company's accounting is centralized, is the volume of rou-

tine transactions large enough to keep two or more people busy recording and balancing them?

3. Are there significant delays in recording and balancing hand-kept figures?

4. Are there breakdowns and analyses that would be useful but which are not made because of the time or cost involved in getting them?

5. Can you see where and how you could recover the cost of the machines, the forms, and the installations? Will these costs be offset by the increased control resulting if more and better accounting data are secured, and transmitted to management more promptly?

Promptness and accuracy in reporting

When accounting is decentralized, one of the first requirements for the preparation of financial statements is a report from each job. Too often these reports are hastily and inaccurately prepared, at times and under conditions that preclude auditing. Such a situation is conducive to serious inaccuracies and delay. This is not to say that prompt, accurate statements are not possible with a decentralized accounting system. It simply means that decentralized accounting increases the chances for error and delays in financial reporting. To overcome those chances for error, it is necessary to make prompt reporting an absolute requirement and regular auditing a routine procedure. Naturally, these procedures add to the cost of decentralized accounting.

When the general accounting, as distinguished from the cost accounting, is centralized, the jobs supply only such basic data as payrolls, materials used, equipment used, materials received, progress billings rendered, and units of work completed. These reports can be scheduled and can be easily checked. Their incorporation into the records can be made a matter of routine, and as such will be subjected to the usual internal controls. The record keeping and the preparation of the financial statements in a centralized system are both under the immediate supervision of the best accounting talent in the company, supplemented, if need be, by the company's outside auditors and tax consultants. It is usual to find that when accounts that have been kept on a decentralized basis are centralized there is an improvement in the promptness and accuracy of the financial reporting for the company as a whole.

No such improvement may be forthcoming if cost reporting is centralized. Generally, the greatest usefulness of keeping job costs lies in having the cost figures available to job management within a day of the events that created them. This condition often leads to the assertion that job cost accounting is an engineering function and should be performed under the supervision of the job engineer.

If the general accounts are centralized and the monthly cost statement is principally a statistical record for banks and bonding companies, this idea has a great deal of merit because under such conditions the only cost figures which can be had promptly enough to be useful to the job management are those which are developed by the job engineer.

There is one organizational hazard, however, in a system that places the keeping of job costs under the control of the job engineer. The engineer works for the project manager or superintendent rather than the central office. If the engineer's boss orders him to juggle the costs so that the job will look good on paper, he needs more than the average amount of courage to keep the costs as they should be kept. It also takes a strong internal auditing program, outside the control of the project managers and superintendents and staffed with auditors who have more than an accountant's knowledge of construction costs, to prevent abuse of authority. Given honest field administration, however brought about, job costs kept in the engineering department can eliminate one of the most valid criticisms of centralized financial accounting and can give job management prompt field costs without interfering with the more formalized financial accounting routines.

Transmitting data for centralized system

The most common method of transmitting data under a centralized system is to require the job personnel to make all records in duplicate and to send copies daily to the general office. This has the disadvantage of multiplying individual pieces of paper, but it has the advantage of simplicity. It has another, equally important advantage. In case of a fire, explosion, flood, or other disaster in the job office the complete documentation and detail from which the records can be rebuilt will always be available.

If bills are paid by checks prepared at the job site, the question of duplicate vendor's invoices is raised. It is commonly argued that, to avoid duplicate payments, the only basis for payment should be the original of the vendor's invoice. Certainly the idea has merit, but it raises some problems, too. If the original is attached to the head office voucher, payment must be made from a copy. If the originals are kept at the job site, then the most authentic record of transaction is subject to all the hazards of the job site and to the risk of loss or destruction in the move to the general office at the end of the job.

Many vendors use the delivery memorandum or the packing slip for an invoice, and additional copies, identical with the original, are made by a duplicating machine. Many contractors feel that all vendors' invoices should be approved by the project manager or superintendent before payment is made. If jobs are scattered this procedure can result in delays. Often such delays, when added to those occuring when the invoices are sent to a central office for payment, can result in the loss of discounts, and give the contractor a reputation among vendors as "slow pay."

If bills are to be paid in the general office, all purchase orders instruct vendors to send invoices to the general office, and require that at least three copies of vendor's billings be submitted. Even if invoices are received at the job site all copies should be sent intact to the general office. The person who opens the mail should stamp the original (or one of the duplicated copies) "payment copy." The first copy should be stamped "job office copy," the next "vendor file copy." If other copies are required, they should be appropriately stamped when they come in.

The vouchering routine must not be interrupted to return invoices for additional copies; it costs less to photocopy them when they come in. The field copies should be sent to the field at once for checking. The voucher copies should go immediately to the voucher clerk. By the time the invoice is vouchered, the field office will have had time to check the field copy, and if there are any objections to any individual invoice they can be made by telephone and confirmed by memorandum. Under such a procedure only one copy ever forms the basis for payment and that copy is in the general office where it is least likely to be lost.

If bills are paid on the job, the problem does not arise, because the originals, or "payment" copies, become a part of the field office copies of the vouchers. The routine of stamping the invoices in the mail room is still a useful one even in the field.

Copies of the documents should be sent to the central office as often as possible—daily, if means of transmission permit. The most common means of transmitting data from the more distant jobs is by mail. On jobs closer to the general office there is usually someone going to the general office nearly every day. If dependable mail or messenger service is not available at least three or four times a week, it is possible that the accounting should be decentralized.

Some contractors whose jobs are partially decentralized use a weekly or monthly report. Others bring their job records up through the voucher register and other books of original entry which are then sent in monthly to the general office for posting to the general ledger. This procedure leaves only a short step to complete decentralization.

4

Prejob Procedures

Staffing the job

Regardless of the size of the contracting firm or the size of the job, somebody has to do the work. An individual contractor doing only one job at a time may put his tools in the back of his pickup truck, call for his helper and go do the job himself. A contractor who has several small jobs going at one time might send out a journeyman on each job and occasionally call at the job to supervise the work On larger jobs the contractor himself may act as foreman or superintendent and have journeymen and helpers working directly under him, or he might employ a foreman or superintendent and confine his own job site activities to general supervision.

At the other end of the scale, the job might be a multimillion dollar project operated by a joint venture employing a project manager, a general superintendent, a project engineer, a project office manager, and a full staff of craft or area superintendents, engineers, foremen, journeymen, accountants, clerical personnel, and laborers. On such jobs the number of people on the payroll may run into the thousands.

Whatever the size or the nature of the job, someone must decide, before the job starts, how many people will be required to do the work and who the key men, at least, will be. This responsibility is management's. However, once the size of the force is estimated and the key people are named, it is generally up to the head of the contractor's office (usually the office manager or controller) to see that their time is properly kept, that they are paid the proper amounts at the proper times, and that arrangements are made for payment of their expenses in reaching the job site, and often for feeding and housing them after they get to the job site. Since modern personnel departments are rare in the construction industry, even among the very large companies, the controller or office manager is usually the one to decide what accounting and clerical jobs are to be done at the job site, and to pick the people to fill them.

Following is a list of a few typical job organization methods with corresponding figures illustrating the flow of accounting data in each situation.

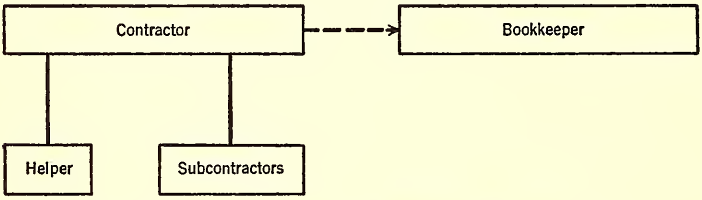


Fig. 4.1 Flow chart for very small organization

Very small organization: The very small contractor of Fig. 4.1 works directly on the job. He keeps the time, buys the materials, and does all the job site receiving. He usually writes checks for payroll and purchases, and turns these basic data over to a public accountant or contract bookkeeper. His staffing problems are virtually nonexistent unless he is trying to find a helper who is capable of developing into a foreman or superintendent. Subcontractors deal directly with the contractor.

Small organization: The small contractor of Fig. 4.2 supervises several journeymen, and usually does his own buying and timekeeping. The journeymen receive materials and supplies delivered at the job site and turn the signed delivery receipts over to the contractor when he visits the job. The contractor makes the payrolls, checks the delivery data, writes both the payroll checks and the vendor checks, and turns the basic records of the transactions over to the bookkeeper. Subcontractors deal directly with the contractor.

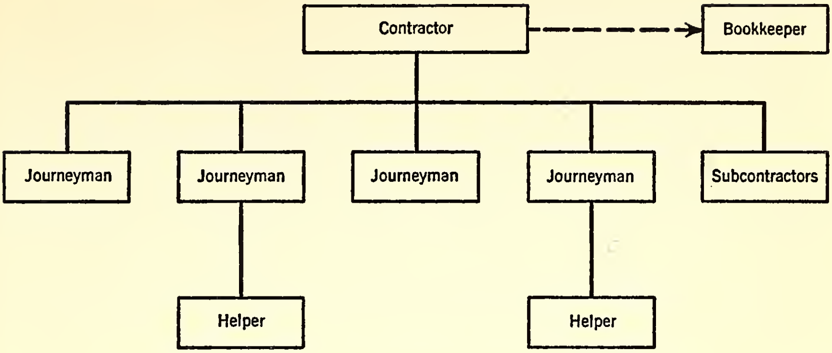


Fig. 4.2 Flow chart for small organization

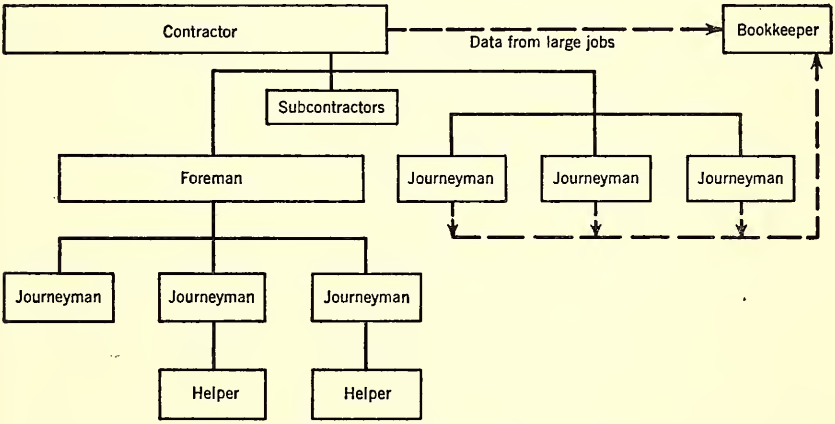


Fig. 4.3 Flow chart for small-medium organization

Small–medium organization: The small–medium contractor of Fig. 4.3 works as foreman or superintendent on one large job while he has other smaller jobs in progress under foremen or journeymen. The flow of accounting data tends to be about the same as in Fig. 4.2, but in operations of this size there is usually a company bookkeeper who assembles the data, keeps the books, and writes checks for the contractor's signature in the company office. Usually, too, in this type of operation, the foreman on the large job keeps the time and receives the materials, and turns the time sheets and signed delivery slips over to the contractor for checking. Subcontractors, for the most part, still deal directly with the contractor, though on the big job some of the dealings will be with the foreman.

Medium organization: In the somewhat larger operation of Fig. 4.4., the contractor supervises several foremen who keep the time and receive the materials and supplies delivered to the job site. Accounting data are picked up and summarized by a field clerk and delivered to the office manager for final processing in the general office. It is at about this point that staffing the jobs begins to present special problems. To keep an operation of this size going, the contractor cannot depend so completely on his own personal observations to follow job progress, but must make greater use of reports. In addition to their technical skill, the foremen must be chosen on the basis of cost consciousness, their ability to manage a crew, and their ability to make independent decisions. When an operation reaches this size, the contractor will often have his foremen picked before bidding a job. In the same way, it is quite common for foremen to have a crew that follows them from job to job. In operations of this size, it is usual for subcontractors to make their original deals with the contractor, but supervision of their work is left to the contractor's foremen.

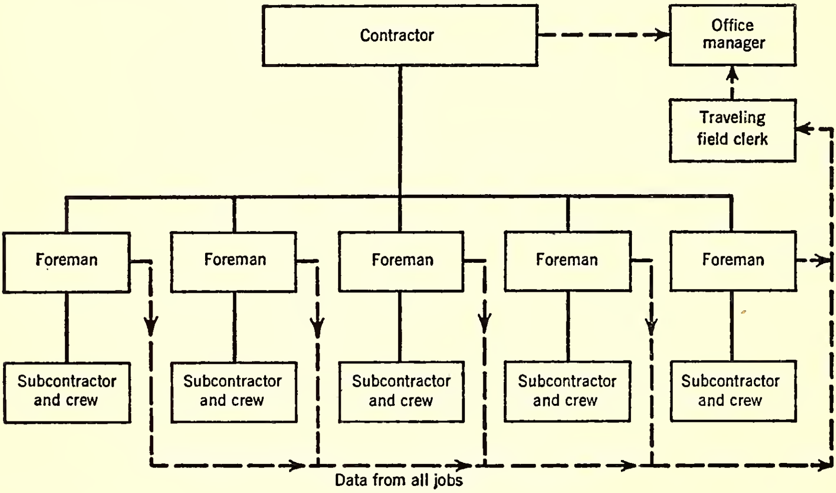


Fig. 4.4 Flow chart for medium organization

Many larger construction companies, whose jobs normally cost $50,000 or less, operate on substantially the same pattern, except that they substitute a superintendent or a district manager in the place of the contractor shown in the diagram.

As the jobs grow larger—say from $50,000 to $250,000—the pattern tends to remain much the same, except that the larger jobs are usually in the charge of a superintendent who may have several foremen and subcontractors under him.

Large organization: As the individual jobs pass the $250,000 mark, there is an increasing tendency for each job to have its own organization, headed by a project manager or superintendent (Fig. 4.5). With centralized accounting, a job clerk and a combination timekeeper–pickup truck driver will usually be enough accounting personnel. With a decentralized system, the job clerk would be replaced by a job accountant, and if there are as many as 100 men on the payroll, there may be a separate pickup truck driver and a combination timekeeper–paymaster, who would probably then spend at least part of his time operating a small warehouse. If the job is cost-plus-fixed-fee, it would probably be necessary to have a full time warehouse man and a full time timekeeper. This pattern tends to apply up to about $3 million, depending on whether the job is centralized or decentralized.

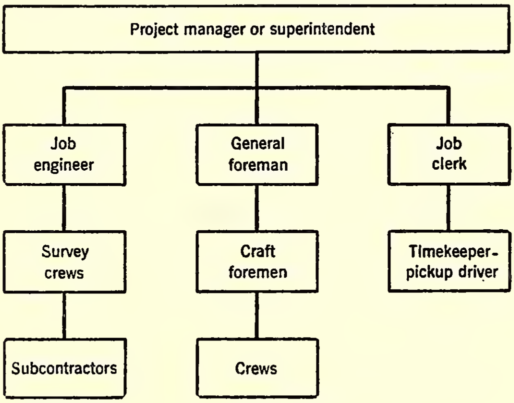


Fig. 4.5 Flow chart for large organization

Very large organization: On jobs costing more than $3 million, the organization will tend to approximate the chart of Fig. 4.6. Again, there will be variations in the actual number of key personnel, depending upon the number of employees on the payroll, whether accounting is centralized or decentralized, and upon the availability of living quarters, messing facilities, and first-aid facilities. This organization chart would serve a job in the $10 million category, for which camp, commissary, and first-aid facilities are needed. Dotted lines show the flow of cost data, which originate in the payroll, timekeeping, accounting, purchasing, and warehouse departments, to the cost engineer. From the cost engineer daily cost reports are sent to the project manager. From the cost engineer also, cost-coded accounting data flow back to the accounting department, where they are incorporated into the general records and the monthly cost reports.

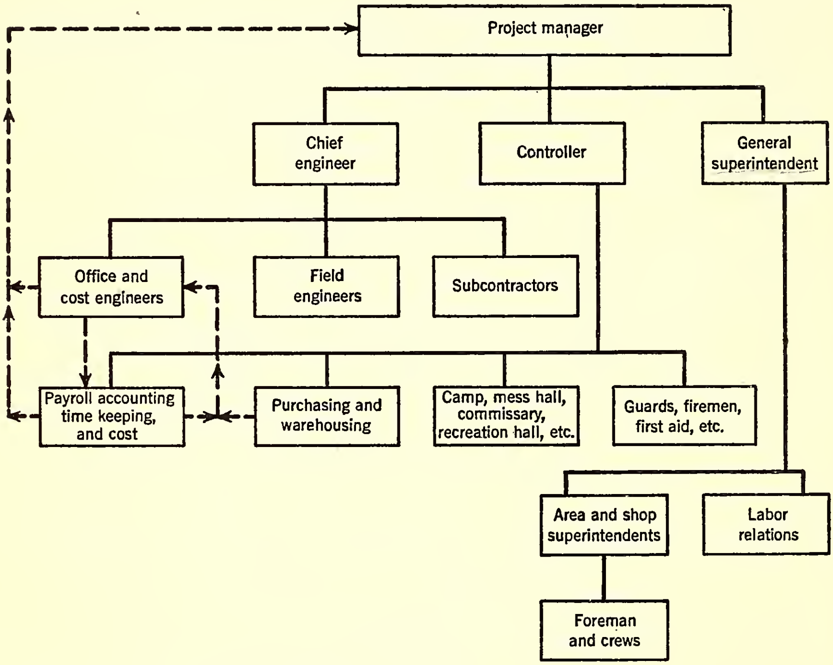

Project manager
Chief engineer
Controller
General superintendent
Office and cost engineers
Field engineers
Subcontractors
Payroll accounting time keeping, and cost
Purchasing and warehousing
Camp, mess hall, commissary, recreation hall, etc.
Guards, firemen, first aid, etc.
Area and shop superintendents
Labor relations
Foreman and crews

Fig. 4.6 Flow chart for very large organization

Picking key personnel

Aside from the office manager, the key accounting jobs in a construction field office are those of payroll and time keeping. Nothing in a construction job office can be more costly than late, messy, inaccurate payrolls. The payroll is the starting point for the paychecks, which must be ready on time and scrupulously accurate if job morale is to be maintained and waiting time penalties avoided. It is also the starting point for the employees' earnings records, the payroll tax returns, and the insurance reports, which must balance with total salaries and wages paid. Despite the numerous controls and cross checks on payrolls, there is still a temporary opportunity (and therefore a real temptation) for dishonesty. The fact that ultimate detection is almost certain does not entirely eliminate the possibility of attempts at payroll fraud. Finally, the paymaster is continuously being subjected to pressure. He must detect errors and omissions in timekeeping, and he must fight a running battle with foremen and field timekeepers to keep the flow of time and cost data steady and accurate. He is under pressure to release checks early, make special advances, pay off employees who have been laid off, and make new additions to the payroll. He must watch for garnishments, attachments, and assignments, and he must be sure to deduct for advances and purchases when men receive termination pay.

If payrolls are centralized in the general office there is no problem in selecting a job site paymaster. If payrolls are decentralized, the paymaster will usually be the first or second office employee to be assigned to a new job. Whenever possible he should be an old hand, thoroughly experienced in construction payroll, whose ability to handle the job is certain. When a new paymaster is to be hired, it is a good idea to employ him soon enough to have one of the old hands on another job break him in. If a new man is to be hired and there will not be time to try him out with another paymaster, great care must be taken to see that he personally knows payroll accounting thoroughly and that he fully understands the operation of a payroll department. His first work on the job should be watched very closely. Recommendations from former employers mean very little, and the man's record on former jobs may be misleading because he might have been getting by on the work of a capable assistant. At the start of a new job things move too fast; there is no leisure to repair errors in judgment on the selection of a paymaster.

Timekeeping is the raw material for the payrolls and for the labor cost reports. It must be done at the place where the work is being done. If it is inaccurate it leads to one or more of the following consequences:

1. The men are overpaid and the costs are increased.
2. The men are underpaid and there is trouble on payday.
3. The paymaster's work is delayed by his having to catch and correct errors.
4. The labor cost figures become meaningless because of inaccurate or careless work designations.

Some companies have the foremen keep the time. The foremen who are chosen to keep time must be willing to take the pains necessary to do it correctly and turn it in promptly. Other companies use time keepers. Timekeepers need to be familiar enough with construction work to be able to watch a crew of men at work and know what they are doing. The idea that "anybody can be a timekeeper" is not only false but risky. Nevertheless, it is a job that a person of reasonable intelligence can be trained to do with moderate ease. Some companies break in their young engineers by starting them as timekeepers; their work needs close supervision. Most companies use the job of timekeeper as the first step in learning construction office work.

One of the most important attributes of a timekeeper is personal integrity. He is in a better than average position to soldier on the job without being caught, and he is constantly faced with opportunities to profit by collusion. Therefore, some independent check on the activities of field timekeepers should be provided. Once a man's integrity has been reasonably established, the need for constant supervision no longer exists. On the other hand, it is poor management to place any employee in a position where he is subject to unnecessary temptations. If timekeepers are used, it is better to have more than one and change their assignments from time to time to prevent collusion. If foremen are to keep the time it is well to provide at least one timekeeper to make spot checks and turn in time independently on the crews checked.

The duties of the job office manager (or project controller, or business manager, as he is sometimes called on large jobs) will vary widely, depending on the size and nature of the job, and on whether the accounting is centralized or decentralized. To be project controller on a large job with decentralized accounting, a man should have formal training in accounting equal at least to two years of college plus at least five years of successful accounting experience in a construction field office. At least one of the five years should be as a paymaster on a payroll of 200 or more men. He must be aggressive, intelligent, and a capable administrator.

On a small job where accounting and payrolls are centralized, the job office manager need be little more than a good timekeeper and clerk. For jobs in this category there are no particular educational requirements, and the man's experience need only be in the fields of timekeeping, materials checking, and clerical work.

Other job office personnel can be chosen principally on the basis of experience in the job for which they are hired. However, in evaluating the experience of a job accountant, it is a good idea to find out if he knows double-entry bookkeeping. If he has worked only for companies with centralized systems, he may never have seen, much less kept, a general ledger. Warehousemen should be chosen largely on the basis of their knowledge of warehousing procedures, and of the various materials, supplies, and spare parts which are to be found on the company's jobs. No amount of accounting knowledge can substitute for these attributes.

Personalities

There are few types of work where pressures and emotional strains are greater than on a construction job. Hard-driving project managers and superintendents often push themselves and the men under them close to the limits of human endurance. The fact that office personnel are generally considered "nonproductive" tends to make the pressure even greater in the job office. It is vital, therefore, that the job office manager be able to get along with the project manager and the project engineer without sacrificing any important matters of principle.

Most of the problems between the office and the operating personnel on a job may be solved or prevented by the attitude of top management. If that attitude is one of mere toleration for "nonproductive overhead," it will be reflected in job management, and the job office will be reduced to a clerical operation, staffed by people who take orders and say nothing. If the attitude of top management is that the office, like every other department, must be productive and contribute its full share to the final job profit, then it is safe to staff the job office with personnel capable of living up to such an assignment. A mixture of the two attitudes, however, can produce either costly dissension or needless expense. If the man in charge of the job considers the job office as "mere nonproductive overhead" it is usually better to centralize all but the most routine clerical functions.

Personnel transfers and transportation

If jobs are small and all the key personnel live nearby, there is no problem of transferring and transporting job personnel. However, when the key people must be brought in from other jobs or from other localities, a number of problems can arise.

In selecting personnel, thought must be given to salary relationships and living-cost differentials. For example, a company which adjusts salaries to make up differences in living costs may find it necessary to reduce some salaries when men are moved from areas where living costs are high to others where living costs are low. Most employees resent any downward adjustment in the rate of pay, and frequently this results in the loss of capable, experienced men. The alternative is to raise the salaries of others to maintain proper relationships, and in such cases the contractor may find himself in the unhappy position of disturbing local salary scales and creating an unbalanced relationship between the salaries he pays and those paid by the owner-client or the key subcontractors. This type of problem can usually be met most effectively by setting a uniform salary scale and supplementing it by providing key personnel with housing, transportation, and a cost-of-living allowance based on a differential between living costs at the location of the general office and those at the job site. In setting such a differential, the effect of state income taxes on "take home" pay must not be overlooked. Thus, a move from Nevada, which has no personal income tax, to California, which does have such a tax, could have the practical effect of a cut in salary.

When a joint venture is formed to do a job, care must be taken to coordinate the policies of the member companies regarding salaries, expense allowances, bonuses, vacations, and other personnel matters if personnel from more than one company are to be employed. For this reason it is better, if practical, for the sponsoring venturer to staff the job.

It is usually short-sighted economy to pinch pennies in the allowance of family moving costs. It takes only a few costly moves to convince an employee he would be better off to take a steady job at a smaller salary and stay in one place.

Essentially these are management problems, but they touch on the field of accounting in these ways:

1. A centralized accounting system will eliminate most of these problems as they apply to key personnel in the job office.

2. On cost-plus-fixed-fee contracts it is common to find moving and transportation costs and cost-of-living differentials reimbursable to the same extent allowed by the contractor on lump sum work. Also, it is customary to decentralize the accounting on cost-plus jobs because very few owners are willing to pay the cost of centralized accounting even though the cost of decentralized accounting would not be questioned.

3. Administration of expense reimbursement policies is usually the task of the controller's department, and it is therefore up to the controller to see that these problems are considered in setting policy. On large jobs it is of prime importance that these policies be set before the job is started. Changes in such policies made later can easily lead to charges of favoritism.

Delegating responsibility and authority

It is an axiom of business organization (too often ignored) that when an employee is made responsible for the success or failure of some aspect of the operations, he must have the authority necessary to carry out that responsibility. This axiom is just as true in a construction job office as anywhere else, but a construction job moves so fast that the results of failure to observe it are sometimes more dramatic and costly. Fortunately for many contracting companies, construction men are an independent lot, and if something needs to be done able men will do it first and answer questions about their authority later if necessary. Unfortunately, such action is often taken by men whose will to get the job done is exceeded only by their lack of knowledge of how to go about it. As a result, some things that need to be done are often done in a way that is needlessly expensive.

Consider the example of a contractor who had a large U.S. government contract. The excavation on the job had been subcontracted to a company whose financial position was known to be very weak. One day the accountant in charge of the prime contractor's office received a registered letter from one of the subcontractor's creditors. The letter mentioned, among several other things, the fact that the subcontractor owed the creditor a stated amount of money.

The office manager had never heard of the Miller Act (Chap. 14), so he filed the letter. Then he telephoned the creditor to ask him not to tie up the job, and to assure him that the account was being given personal attention. The accountant also said he would take steps to see that the account was paid. Only after the subcontractor had gone bankrupt and the prime contractor was being sued for his unpaid bills did the accountant's action come to light. Even then its seriousness was not fully appreciated until the prime contractor found himself bound to pay the bill.

So the axiom that authority must be equal to responsibility has a corollary—before delegating responsibility, be sure the employee to whom it is delegated is capable of discharging it.

Perhaps, at this point, a footnote might be in order for those contractors who consider experience as all-important, and who discount the value of education. The accountant in the example just cited had ten years of heavy experience as a construction job office manager. Still he did not know one of the things a course in elementary commercial law would have taught him—that sometimes a promise to guarantee payment of an account does not have to be in writing if the principal purpose of the guarantee is to benefit the party who gives it. A little internal staff training would probably also have made the accountant aware of the existence and general nature of the Miller Act.

General office–job office relationship

One of the most common mistakes in any company where there are branches or subsidiary offices is to imagine that figures compiled in the branch offices cost the company nothing. Construction company executives tend to make the same mistake about job offices, particularly if the accounts are decentralized. Often the effect is to burden the job offices with unnecessary work simply because the cost is charged to job overhead instead of general office overhead. The cost to the company is the same or more, even though charging it to the job may improve the appearance of the general office overhead budget.

Another expensive practice that tends to grow up between general office and job office is that of accepting, without checking, the figures supplied by one to the other. This practice is an open invitation to error, yet it is a rare office where you will not occasionally hear the defense: "It isn't my fault. That's the figure they gave me."

Company policies and job conditions

Because the principal thing a contractor has to sell is his own know-how and that of his organization, the problems of staffing jobs are never-ending. Just as each job offers construction problems peculiar to itself, so each has its own staffing problems. It is a rare organization that can fill all important jobs from its own ranks. Likewise it is a rare organization that will not find new staffing problems arising from shifts in company policy and job conditions. Therefore new people are always entering the organization, bringing with them the standards of their former jobs. Each company must necessarily have standards of its own, and it is not practical to attempt to hold employees to a standard unless they are told what the standard is. Therefore, as soon as a contractor reaches the size where authority to make administrative decisions must be delegated to others, a manual of policy and procedure, and a program for making its contents known to key employees, is vital. One of the most important of the prejob procedures is to make sure: (1) That the people who will be assigned to the job are properly briefed on that job; (2) That they are supplied with the proper manuals; and (3) That they know what is in them and how that information is to be used.

Establishing the cost code

Before costs can be kept on a job, it is necessary to determine the cost accounts that will be used and the symbols that will be used to designate those accounts. This procedure must be established before the job starts; otherwise, the expense of keeping job costs will probably be wasted because the figures will come too late to do much good.

Most effective cost codes are set up to follow the bid and to enable the compilation of cost figures on the same units as those used in preparing the initial bid. Only in this way can the effectiveness of the bidding methods be checked against actual operations. In addition, where progress billings are based on percentage of completion, costs kept by bid items are helpful in establishing the percentages.

Standard coding: If the type of work a contractor does is fairly well standardized, it is usually possible to prepare a standard estimating checklist that can be the basis of the cost code. Schedule 4.1 is the bidding checklist used by a builder of larger structures (office buildings, hospitals, public buildings, and so on).

SCHEDULE 4.1/CHECKLIST OF STANDARD CODING FOR LARGER BUILDINGS

1 Job overhead
2 Demolition
3 Excavation, grading, and subsurface drainage
4 Stabilization (including piling, shoring, and underpinnings)
5 Paving
6 Structural concrete work (including forming)
7 Scaffolding, hoists, and the like
8 Masonry
9 Caulking and weather stripping
10 Precast concrete, planking, and joists
11 Decking (poured type)
12 Structural steel
13 Miscellaneous and ornamental iron
14 Aluminum and stainless steel work
15 Steel windows
16 Doors, bucks, and frames (metal)
17 Insulation
18 Lumber and carpentry
19 Rough hardware
20 Flooring

SCHEDULE 4.1/CHECKLIST FOR LARGER BUILDINGS (Cont.)

21 Millwork, cabinet work, and wood and sash doors
22 Finish hardware
23 Lath and plaster, and interior finish
24 Acoustical work
25 Tile work—ceramic, quarry, slate, marble, and terrazzo
26 Composition tile and linoleum
27 Interior partitions
28 Glass and glazing
29 Roofing and waterproofing
30 Sheet metal
31 Plumbing—internal and outside utilities
32 Heating, ventilating, and air conditioning
33 Elevators and dumb-waiters
34 Fencing, landscaping, seeding, sodding, and planting
35 Painting and decoration
36 Special equipment

Each of the major subdivisions in Schedule 4.1 will have an internal breakdown. For example, Item 14, Aluminum and stainless steel work might well have the subclassifications shown in Schedule 4.2.

It is not hard to see how, by merely adding a series of numbers, this standard bidding analysis can be converted into a ready-made

SCHEDULE 4.2/BREAKDOWN OF A MAJOR SUBDIVISION OF A COST ACCOUNT

- A Aluminum doors and frames
  - A1 Hardware
  - A2 Erection and handling
- B Aluminum windows
  - B1 Projected type
  - B2 Double hinge
  - B3 Mullions, covers, and hardware
  - B4 Stools and sills
  - B5 Screens
  - B6 Erection and handling
- C Stainless steel work
  - C1 Erection and handling
- D Architectural aluminum
  - D1 Spandrels, facia, and trim
  - D2 Erection and handling

cost code. For example, it is common to see each cost account broken down as follows:

.1 Labor
.2 Incorporated materials
.3 Equipment rentals
.4 Supplies and other direct costs
.5 Subcontracts
.9 Distributed overhead

Thus the hoist rental in hoisting aluminum windows to the upper story of a multistory building would be coded 14B6.3. If it were decided before the job started that Item 14 is not important enough in this job to justify keeping costs on the basis of the full breakdown, the major item might be used alone, in which case the coding of the hoist rental would be coded 14.3. Often house builders confine their cost keeping to the major items in their estimating checklist, such as site preparation, streets and sidewalks, sewers, and concrete foundations and slabs.

Coding by work items: Specifications for large jobs often break the job down into work items. When the job is bid, the estimates will usually follow these work items. Many contractors set up a separate cost code for each job, following the work items in the specifications for that job. It is argued in favor of these special cost codes that if the cost figures are used in the preparation of other bids it is necessary for the estimator to look at the related specifications, and by checking the specifications he avoids the risk of using an inapplicable figure.

There is a certain amount of merit to arguments in favor of setting up separate cost codes for each job. Every job has its own peculiarities, and if a standard code is used to develop average unit costs, those peculiarities become merged in the averages. When the averages are higher than the correct figures there will be a tendency to lose jobs. When the averages are lower than the correct figures they will tend to make the contractor low bidder on unprofitable work, or "leave too much on the table." Either alternative is costly.

It is only when the averages fall reasonably close to the correct figures that the bidder would tend to get a reasonable share of the profitable jobs.

Mnemonic or decimal coding: There are three general types of cost codes: mnemonic, decimal, and mixed. In mnemonic codes, letters may be used to give some indication of the item. Thus in

SCHEDULE 4.3/FORECAST OF CASH REQUIREMENTS ON COST BASIS

Week	*Direct labor*	*Incorporated materials*	*Equipment rentals*	*Subcontracts*	*Supplies, etc.*	*Distributed overhead*	*Estimated progress billings*	*Cumulative estimated cash investment in job*
1	$ 500					$ 750		$ 1,250
2	750					1,250		3,250
3	1,000					1,000		5,250
4	1,250					800		7,300
5	2,000	$ 2,000	$ 1,500	$15,000	$1,000	800	($ 29,300)	300
6	2,000					700		3,000
7	3,000	14,000	4,500		1,250	700		26,450
8	3,000					700		30,150
9	3,000	4,000	5,000	20,000	1,500	700	(63,400)	950
10	3,500					600		5,050
11	4,000	16,000	5,000		1,750	600		32,400
12	4,000					600		37,000
13	2,000	10,000	4,000	20,000	1,500	600	(83,400)	(8,300)
14	1,500					500		(6,300)
15	1,000		2,000		500	500		(2,300)
16	500					400		(1,400)
17				17,000		300		15,900
18							(21,900)	(6,000)
19								
20								
21				8,000			(22,000)	(20,000)
	$33,000	$46,000	$22,000	$80,000	$7,500	$11,500	($220,000)	–0–

the example given, aluminum and stainless steel might have the designation AS instead of 14, and the coding for the hoist rental on aluminum sash handling would be ASB6.3.

A pure decimal system would ignore the nature of the item and would merely code the work item with a number, more or less arbitrarily chosen. If the work item were numbered 75, the erection and handling were designated as 6, and equipment rentals as 3, the coding would be 75.6.3.

The mixed use of letters, figures, and decimals is illustrated by the example first given, in which the item was coded 14B6.3.

Combination coding: Sometimes a company, particularly one doing heavy engineering contracts requiring numerous temporary structures and project shops, will use a standard coding for these distributable costs items, and a decimal system for the actual work items.

Projecting job financial requirements

Every time a new job is undertaken it is necessary to provide financing to operate it, and in order to have money on hand when it is needed, it is important that cash requirements be forecast as soon as possible. This is a simple matter of spreading the estimated costs to the various weeks in which they are expected to occur, and it can usually be done by the estimator as soon as his bid is complete. The spread is usually weekly because the standard pay period is weekly. The estimators should supply this breakdown on any bid that may result in a contract. Thus, on a job estimated for completion in sixteen weeks the breakdown might be similar to the one shown in Schedule 4.3.

Unbalancing the bid: In Schedule 4.3, progress billings are estimated on the basis of a percentage of completion, which is computed by comparing costs on a cash basis to total estimated cost. On this basis the contractor has an investment in the job that at one point reaches $37,000.

One of the methods of decreasing the amount of a contractor's investment in his jobs is known as "unbalancing." The column headed "Estimated progress billings" gives the total price of the job being used as an example as $220,000. Suppose that the job were being broken down by the specifications into ten work items (usually there are more, but ten is enough to illustrate the point), and suppose they are numbered roughly in the order that the work will be done, If the profit is spread evenly over the job, the payment schedule which would be submitted to the architect would look something like the last column of the payment schedule shown as Schedule 4.4 Of course the schedule given to the architect would only show the "Bid price" column.

SCHEDULE 4.4/PAYMENT SCHEDULE

Work item	*Estimated cost*	*Estimated profit*	*Bid price*
1	$ 28,000	$ 2,800	$ 30,800
2	22,000	2,200	24,200
3	12,000	1,200	13,200
4	23,000	2,300	25,300
5	10,000	1,000	11,000
6	20,000	2,000	22,000
7	15,000	1,500	16,500
8	25,000	2,500	27,500
9	21,000	2,100	23,100
10	24,000	2,400	26,400
	$200,000	$20,000	$220,000

Now, suppose that instead of being spread evenly to all work items the profit were spread to the first four work items, and suppose that the $29,600 of cash requirements incurred by the end of the fifth week (Schedule 4.3) was made up as in Schedule 4.5.

SCHEDULE 4.5/PERCENTAGE COMPLETION OF WORK ITEMS

Work item	*Estimated total*	*Costs to date*	*Percentage completion*
1	$28,000	$21,000	75
2	22,000	5,500	25
3	12,000	1,200	10
4	23,000	1,150	5
5	10,000	750	7.5
	$95,000	$29,600	

The over-all percentage of completion, based on cash expenditures alone would be 14.8 per cent (or $29,600/$200,000) but the progress billing, instead of being $29,300 (or $220,000 × .148 = $32,560 less $3,256 retention, or $29,304) would be $32,679, computed as shown in Schedule 4.6.

SCHEDULE 4.6/COMPUTATION OF PROGRESS BILLINGS ON UNBALANCED BASIS

Work item	*Unbalanced payment schedule*	*Percentage completion by items*	*Progress billings*
1	*$ 34,500*	75	$25,875
2	*27,100*	25	6,775
3	*14,800*	10	1,480
4	*28,600*	5	1,430
5	10,000	7.5	750
6	20,000	—	—
7	15,000	—	—
8	25,000	—	—
9	21,000	—	—
10	24,000	—	—
Totals	$220,000		$36,310
Less	10% Retention		3,631
			$32,679

NOTE: Figures in *italics* reflect estimated cost given in Schedule 4.4 plus entire profit for job, prorated among these four items.

Sometimes overhead, as well as profit, is used to unbalance the bid figures submitted as a payment schedule. This method has merit because overhead expenditures tend to be heavier in the earlier stages of the job. Also, by using costs incurred on the accrual basis (instead of on the cash basis as illustrated) it is possible to increase even further the percentages of completion in the earlier stages of the job, and so increase the early progress billings. The result, of course, is to reduce the amount of working capital required to carry the job in its early stages.

Projecting the progress curve: One of the often neglected pre-job procedures is to project the progress of the job in terms of percentages of completion. Normally this is done either by the estimator or by the job engineer. However, before any substantial amount of financial or personnel planning can be done it is necessary to have this information. Sometimes it happens that a progress curve is not prepared by the estimator, and then it is necessary for the accounting department to make its own curve. In some companies the accounting department will prepare a progress curve as a check on the work of the estimator or the engineer.

It is the usual procedure to base such curves on estimates of costs as they will be incurred and not upon the estimated cash expenditures. Thus payrolls, including all related payroll taxes and insurance will be accrued at the end of the payroll week; purchases of materials, supplies, and small tools would be accrued when they are scheduled for delivery on the job; equipment rentals (or prorated shares of equipment ownership expenses) would be accrued at the end of each week based on estimated equipment requirements; other estimated costs would be accrued at the end of the week in which they are expected to be incurred. A progress curve projected on this basis should approximate very closely the percentage of completion curve customarily prepared by the engineers.

Such a curve usually takes the form of an "S." In other words it starts slowly, rises sharply as the job reaches full production, and then tapers off as the job approaches completion. Illustrated is a typical pattern for a job estimated to cost $200,000 and to last 16 weeks (Fig. 4.7).

Retained percentages: It is customary for progress payments to be made either monthly or at certain agreed stages of completion. It is also customary for the owner–client to withhold an agreed percentage (usually from 5 to 15 per cent) of each payment. To forecast financial requirements, it is necessary to forecast the progress billings and the dates of their collection. It is equally important to forecast the date of collecting retained percentages. Many subcontractors find this problem particularly acute because prime contractors generally require subcontractors to wait for their retentions until

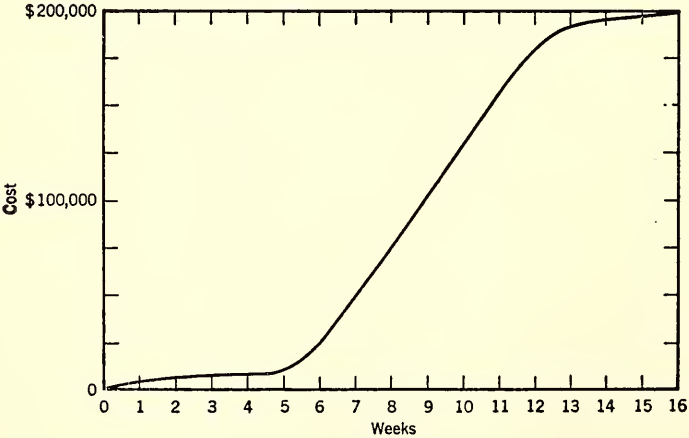


Fig. 4.7 Typical progress curve

the prime contractor receives his at the conclusion of the entire job.

Such a situation must be taken into account in the prejob planning. Often the problem can be avoided by including in the subcontract bid, as a separate bid item, interest on any portion of the subcontractor's retained percentage that remains unpaid after completion of the subcontractor's work.

If the prime contract contains language affecting the percentages to be held back from subcontractors as well as the prime contractor, those provisions must be taken into account in forecasting the cash to be received by the subcontractor on progress billings.

Job bank accounts

When men are laid off, they must be paid at once. If it is not practical to prepare their final checks in the general office, it is necessary that an imprest account (revolving fund) be kept at the job site to handle these payoffs. Then when the regular payroll is prepared a regular paycheck is issued, but instead of being made payable to the employee, it is made payable to the revolving fund account. If all paychecks are written at the job site there is no need for the special imprest account.

What bank accounts will be needed and where they will be kept must be determined in advance. It is quite common for the job's general disbursement account to be kept in the bank from which the company borrows money. If this is done, the checks should be of a different size, color, and number series from the checks used for other accounts that are kept in the same bank, in order to prevent confusion.

Payroll accounts are usually kept in some bank near the job site because of problems that sometimes arise in cashing payroll checks drawn on out-of-town banks. Provision should be made to keep a large enough average balance in the payroll account to make the account profitable for the bank, so the service will be good. If the payroll is large and the local bank is small, it may be that the demand to cash checks on payday will tax the bank's normal cash reserve. Arrangements should therefore be made in advance to give the bank a reasonable estimate of the size of the payroll so that enough cash can be on hand.

The requirements of each bank regarding signature cards, resolutions, and authorizations, should, of course, be determined in advance as far as possible, and complied with before the job is started.

If such arrangements cannot be made, it will be necessary to open the accounts on temporary authorization and with temporary signature cards. Most banks will cooperate in these emergencies. If, for some good reason, the bank cannot accept emergency authorizations, the project manager or the job office manager may have to open an account in his own name for a short time until formalities can be complied with.

It is usually a good idea to require two signatures on general disbursement checks, but one signature (sometimes made by a mechanical check signer) usually gives a reasonable degree of safety on paychecks because there are so many controls and cross checks on the payroll. Also, the volume is often so great on a payroll that a second signature becomes so automatic that it is virtually meaningless. Sometimes, for example when checks are presigned, the second signature may even be dangerous.

There should be enough authorized signers on the job so that there will never be any reason for presigning checks. There should also be enough authorized signers in the general office, so that, if need be, a check may be issued without any signature from the job. If the job is a joint venture, it may be desirable in some circumstances to have a full complement of authorized signers in the office of each venturer. On the other hand, it may be desirable to require one signer from each venturer's office before a check can be issued against the job's general disbursement account.

Planning the job office

If there is to be a job office, there are a number of decisions to be made, before the job starts, about the physical arrangements, supplies, and equipment.

If the job office is to be staffed with only one man, it must be remembered that he will receive all incoming telephone calls and meet all salesmen, new employees, union representatives, and visitors. Therefore, his desk should be located so that he can see people coming on the job and also see the work area. His desk should be behind a counter and the telephone should be outside the reach of persons on the outside of the counter. A public telephone in a protected booth should, whenever possible, be placed outside the office. The window from which the office man can see the job should be built to serve also as a pay and time window, and a place where matters can be discussed with foremen and workmen. If the work area is close enough he needs either a public address system or a bell system to call the superintendent or the engineer to the telephone, and inside the office, he should be able to transfer incoming calls to the superintendent, the job engineer, or the office of the owner's representative.

He will need a typewriter (preferably with a 15-in. carriage), and if he is to keep time and check incoming invoices, he will need an eight- or nine-column adding machine, and preferably a small calculator as well. If he is to write paychecks, he will also need a check protector. If he is to have blank paychecks on the job, he needs, at a minimum, a locked filing cabinet, and preferably a small safe. Illustrated is one typical arrangement which has proved practical under a variety of conditions (Fig. 4.8).

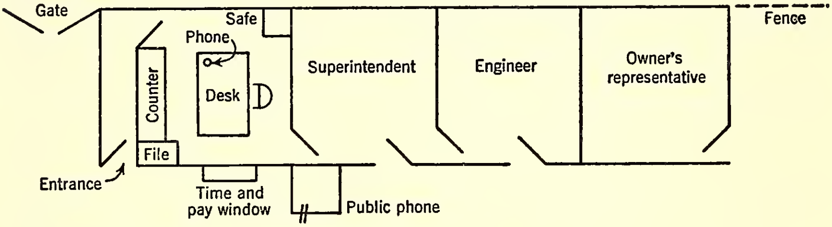


Fig. 4.8 Typical job office

If there is more than one man in the office, the same basic floor plan can be extended to form a "T," an "L," an "H," or a "U." Thus, in an office for two people, the wall on which the pay window is located could be extended as far as necessary toward the work area to form an "L," or it could be extended in both directions to form a "U" or an "H." The superintendent or project manager is still centrally located, and the owner's representative can still be given adequate privacy close to but not directly connected with the offices of the engineers and the project manager. Sometimes it may be desirable to have an especially wide eave on the side toward the work area and, if the weather is likely to be excessively hot or rainy, a covered porch or walkway on that side may be in order.

If job offices are designed on a plain rectangular floor plan like the one in Fig. 4.8, it is often possible to build them in 4-ft sections so they can be easily taken down and stored at the end of one job and quickly erected on the next one.

If accounting, payrolls, and accounts payable for a job are decentralized, it is necessary to have checks and stationery printed, and this may take longer than the time available before the job starts. A mailing address for the job may not always be immediately available, and until one is established there can be no stationery printed. However, initially it is easy to print some checks without a bank name and to add the bank name with check stickers which virtually all banks can supply. Usually the business-type checkbooks or the payroll checkbooks issued by the banks are inadequate for a job of the size which would require a separate job office. It is generally better to have check forms that fit the contractor's system and to put the stickers on them. The stationery can easily be overprinted in red, "Please address reply to ______________," which will normally be satisfactory until any regular job stationery can be printed.

Some of the larger construction companies have a basic initial order of forms and supplies boxed and ready to ship to a job on a moment's notice. This practice can save a great deal of time in the job office. At the start of the job there are always so many interruptions and delays that it is wise to try to avoid the ones caused by shortages of supplies.

Planning a joint venture

When the job is to be done by a joint venture, that fact usually (though not always) is known at the time the job is bid. However, aside from preliminary agreements regarding bidding costs, there is usually little preparatory work done until the bids are in, and it appears that the contract will be awarded to the joint venture.

Some states require that a separate contractor's license be obtained before the joint venture may submit a valid bid. If so, the license must be secured before the bid date. If a license is not required until work starts, one of the first requirements after the award of the contract would be to obtain any required licenses. In addition, there is a joint venture agreement to be prepared and signed; there are powers of attorney in favor of the project manager (and perhaps certain of the other key job personnel) to be prepared; there are signature cards and bank resolutions to be obtained; and the joint venture partners are to be notified by the sponsoring venturer, or by the management committee, how much money they will be asked to furnish and when it will be needed.

It is desirable that there be a complete understanding of what each venturer is to do. The most practical solution to this question is to agree that one of the members is to act as sponsor, that is, managing partner, and to let the sponsor make the decisions after discussions at the policy level.

Under the sponsorship system, complete control would be vested in the sponsor. The nonsponsoring members would normally be entitled to regular (usually monthly) reports on the job finances and job progress. They would also be entitled to share with the sponsoring venturer any decisions on liquidating job-owned equipment and to participate pro rata in job distributions.

Control by a management committee made up of a representative of each member of the venture is a common device to spread the responsibility for management decisions. It is not so popular as the sponsorship method, however, because it is generally less efficient.

There are several accounting matters for a joint venture that should be determined in advance and either written into the joint venture agreement or in supplemental exchanges of correspondence.

First, the accounting method (cash or accrual, and if accrual, whether completed-contract or percentage-of-completion) and fiscal year need to be decided upon and the decision recorded. Present Internal Revenue Code provisions require that, lacking the Commissioner's permission for some other fiscal year, the fiscal year of a partnership (also a joint venture) must follow that of the principal partner. It seems likely that the sponsor of a joint venture would be considered the principal partner if participation is equal. In any event the point should be considered and determined at the policy level, and not left for someone in the sponsor's office who might bind the joint venturers to a decision without knowing its over-all effect.

Policies on depreciation and accounting for ultimate disposal of joint venture equipment should be agreed upon in advance and preferably made a part of the joint venture agreement. In making these decisions it is important to consider the effect of local sales and use tax laws, as well as income taxes.

There seems to be very little doubt that for federal income tax computations, the partnership rules will govern joint ventures. Assets contributed to a joint venture by one of the venturers carry over their "basis," that is, cost for tax purposes, from the books of the venturer to the joint venture. If assets are put into the venture, the joint venture agreement should state clearly how the depreciation and gains or losses from their sale are to be distributed among the venturers. Under the 1954 Internal Revenue Code the preparation of a joint venture agreement is a much more important and technical job than it has ever been in the past, and it should not be undertaken without the help of expert tax counsel.

If the joint venture is to have a fully decentralized accounting system, that fact should be covered in the joint venture agreement. So, also, should the extent to which the venturer may be called upon to reimburse traveling expenses of executive personnel of the joint venture partners.

If one of the venturers rents equipment to the job or performs special services for the job (purchasing, payroll accounting, or field auditing), the basis for payment by the joint venture should be covered in the joint venture agreement or by a prejob memorandum supplementing the agreement.

It is not uncommon to find personnel from more than one of the joint venturer's organizations on the payroll of the joint venture. This raises a whole series of questions relating to personnel policies, including pay scale, bonus policy, vacations, sick leave, mileage allowances, participation in pension plans, group insurance, and profit sharing trusts. The most satisfactory adjustment of these differences is to let each member of the venture bear the cost of bonuses which exceed those allowed by the other members, but otherwise to pass the costs on to the job. Each member should stand the cost of fringe benefits to his own people, and if vacation or sick leave allowances of one member exceed those agreed upon for the venture, then that member should stand the cost of the excess. In any event, there should be prejob agreement between the venturers on all such personnel policies insofar as they affect the venture.

Permits, licenses, and permissions

One important prejob procedure that is commonly neglected is the securing of required licenses and permits. When a construction company goes into another state to bid or perform work it must:

1. Qualify to do business there, if it is a corporation.
2. Secure any required state and local contractor's licenses.
3. Register as an employer with the state department of employment, and sometimes with the board or commission which deals with employee safety and industrial accidents.
4. Secure the necessary state and local licenses for its automobiles, trucks, and other equipment.
5. Determine whether it is required to hold a state or local sales tax or gross receipts tax permit; to withhold state income taxes from its employees; or to file a property declaration for property tax purposes; and comply with any other applicable laws and regulations.

Even in its own state a construction company must frequently obtain local contractor's licenses and special vehicle licenses as well as local sales tax permits. Sales and use taxes and transportation taxes are growing in importance, both as a source of revenue to governmental bodies, and as a tax cost and filing requirement to be reckoned with. To a contractor who is constantly going into new communities to do business, they are an important item on his checklist of things to consider in bidding and in carrying out his contracts.

The federal government and many state and local governments prescribe minimum rates of pay and require that special permission be obtained for any deductions from employees' paychecks other than required tax deductions, union dues, group insurance, garnishments, and so on. If pay rates are mentioned in the contract they should be checked before the job starts, to be sure that the prescribed minimum wages do not upset existing pay scales and area differentials. Also, if deductions for meals, lodging, commissary purchases, charitable contributions or other similar purposes are to be made, the necessity for permission should be investigated.

Another important prejob procedure is a careful consideration of local union requirements with particular reference to payroll and hiring procedures, and contributions to union health and welfare funds.

Since almost all of these requirements are local, detailed instructions are not possible. The best procedure is to obtain local advice wherever a job site is to be located.

5

Purchasing Policies and Procedures

Contractors who have no separate job offices must necessarily do their purchasing from the general office. In fact, in one-man firms the purchasing functions are centralized in the contractor himself, except for occasional small items bought on the job to fill an immediate need. As jobs spread out over more territory, and as they become larger, there is increasing pressure for more job site buying.

The advantages of job site buying over centralized buying are that:

1. Local merchants will tend to give better service on emergency requirements if major purchases are made locally.
2. Relationships in local communities where jobs are located are improved.

The advantages of centralized buying over job site buying are that:

1. Local buying tends to be in smaller lots, and so the price advantages of volume buying are lost.
2. When shortages develop, suppliers give preference to long-term, large-volume customers.

3. Local job site buyers have no way of knowing when surpluses of certain materials and supplies develop at other jobs, and so one job may be buying at market price the same items that another job is liquidating at a loss.

Purchasing objectives

There are five major factors to be considered in setting purchasing policies for a construction company:

1. Price
2. Quality
3. Delivery
4. Vendor responsibility
5. Quantity control.

The relative importance of these items is not necessarily indicated by the order in which they are named.

Price, of course, is of prime importance, but when lower purchase prices are offset by losses due to delays, additional expediting costs, and questionable quality, they can usually result in a higher final cost. It is common to hear purchasing agents talk about making a "profit on buying." That is a fallacy. A contractor makes a profit only on completed work, and it is only when buying contributes to the final job profit that it contributes to earnings. In other words, it is easy to make a paper profit on buying and then lose it trying to complete the job under adverse conditions that ill-considered "price alone" buying creates.

Quality is controlled by the specifications, and the client–owner can expect only what he has specified and is willing to pay for. Sometimes specifications will call for inferior materials but will set standards which, if met, would require materials of top grade. The estimator must watch for such inconsistencies.

In many respects, however, quality does vary, and when a vendor delivers substandard materials he has cost the contractor time and money through handling costs and delays even though he may ultimately deliver goods that meet specifications. The cost is even greater when inferior or defective materials are installed and have to be removed. Uniformity and dependability are the most important things to think about when evaluating the quality of a vendor's products.

Delivery schedules can sometimes be the controlling factor in determining what to buy and where to buy it. Because timing is vital on any construction job, delays and errors in deliveries can often be expensive out of all proportion to the value of the items purchased. Delivery ahead of schedule, on the other hand, can result in loss through spoilage or theft (Chap. 9) or disrupt cash forecasting by moving discount dates ahead. Therefore, in evaluating a vendor's proposal, the vendor's reputation for delivering exactly what is ordered on the exact day for which delivery is scheduled is a matter of importance.

Vendor responsibility is a term that has a number of meanings, and all of them are important. It is directly related to the supplier's ability to provide goods of uniform quality, make accurate deliveries, keep precise delivery schedules, and still sell at a price which meets comparable competition. It also means the willingness of the supplier to make fair and reasonable adjustments when errors do occur, and the extent to which a supplier will back up its salesmen in their efforts to help their contractor-customers solve difficult supply problems. In summary, it means the extent to which a vendor may be relied upon to live up to the spirit as well as to the letter of its obligations, and its willingness to share its customer's problems. These factors are intangibles, but their effect over a period of time can be very real.

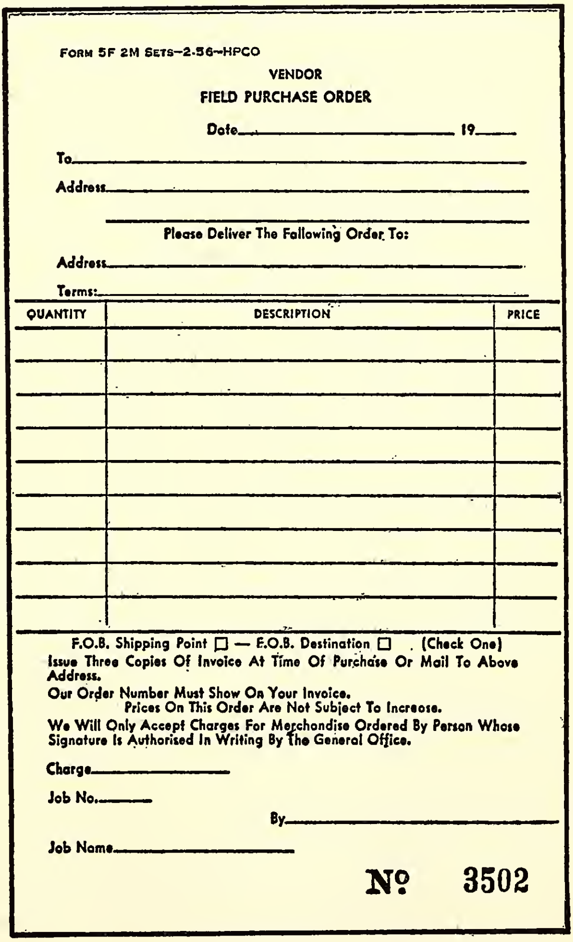
Quantity control is an internal problem, but it is still an important one for anyone responsible for the purchases of a construction company. Because money invested in surplus materials and supplies is idle money, it is vital that the purchasing department of any construction firm know what is on hand, and when and if it is going to be used in the foreseeable future. Often the temptation is very great to make large bargain purchases of standard materials or equipment. Sometimes such purchases are good business. Certainly they are when use can be foreseen in the near future. The test is this: Is the amount saved on this purchase as good a return on the money tied up as might be earned elsewhere in the business?

The problem of pickup purchases

On every construction job there will arise unforeseen needs for small items that must be purchased locally. When job needs are properly anticipated, these items will be minor. Still, failure to anticipate job needs cannot ordinarily justify delaying the job until routine purchasing procedures (see "Mechanics of buying," below) can be followed.

There are several alternatives. Purchases can be made from petty cash and supported by paid bills. A variation of this procedure is to allow the individual to make the purchases out of his own pocket and to receive reimbursement on the basis of paid bills. Another procedure is to issue blanket purchase orders to certain local suppliers covering requirements for a month. These devices are all subject to the criticism that there is no control before the purchase is made, and there is no way to compare the invoice or cash register slip with items actually authorized for purchase.

One of the more satisfactory answers to the problem of "pickup purchases" is the field purchase order (Fig. 5.1). This is a simple, handwritten form small enough to be carried in the superintendent's pocket or in the glove compartment of his pickup truck. When the need



FORM 5F 2M SETS—2-56—HPCO

VENDOR

FIELD PURCHASE ORDER

Date____________________ 19____

To________________________________

Address________________________________

Please Deliver The Following Order To:

Address________________________________

Terms:________________________________

QUANTITY	DESCRIPTION	PRICE

F.O.B. Shipping Point ☐ — F.O.B. Destination ☐ (Check One)

Issue Three Copies Of Invoice At Time Of Purchase Or Mail To Above Address.

Our Order Number Must Show On Your Invoice.

Prices On This Order Are Not Subject To Increase.

We Will Only Accept Charges For Merchandise Ordered By Person Whose Signature Is Authorised In Writing By The General Office.

Charge________________

Job No.________

By________________________

Job Name__________________

№ 3502

Fig. 5.1 Field purchase order in quadruplicate

arises to make a pickup purchase the superintendent can write out the order in a few seconds. The record is kept clear and all purchases are still authorized in advance. At least once each week copies of the field purchase orders are sent to the general office so that the person in charge of purchasing can keep control of the miscellaneous job site purchases.

Purchasing and expediting

There are two major steps in procurement—purchasing and expediting. Purchasing includes finding required materials, supplies, and equipment, and buying them on the most favorable terms that can be arranged. Expediting is the job of following up the purchase to see that the items ordered (and not substitutes) are delivered, and that the delivery is made at the place and time required by the contractor's operations.

Both buyers and expediters need a specialist's knowledge of construction materials, supplies, and equipment. Both need to be able to read plans well enough to take off materials lists. Both need a sufficiently detailed knowledge of construction to know, at least in a general way, where and how the things they buy will be used on the job for which they are buying. Without this knowledge they are not in a position to exercise the judgment necessary to a proper performance of their jobs. Because of these requirements, there has been a tendency in construction companies to place the procurement functions in the category of engineering or operations, and certainly such a classification makes good sense.

On the other hand, there is a tendency on the part of buyers and expediters who operate as a part of the engineering or operations departments to overlook the important accounting aspects of their jobs, and this has led many construction controllers to seek jurisdiction over the procurement functions. For example, it is sometimes possible to make all major purchases of materials and supplies at the start of a job. If this is done, and the personnel on the job place orders for still more supplies and materials it means that one or more of the following is true:

1. The original take-off was wrong.
2. Materials and supplies are being lost or stolen, either on the way to the job or after they get there.
3. There may be some items which are being paid for twice.

These are all matters that merit careful attention, yet a purchasing department completely controlled by engineering or operations personnel is often inclined to disregard them in the interests of job progress.

Another example of the tendency of operating personnel to disregard the accounting aspects of procurement functions is to be found in the use of the purchase orders (see "Mechanics of buying," below) as a part of the vouchers to support cash disbursements. Prices on purchase orders are used by the accounting department primarily to check the prices on vendors' invoices. Pricing the items purchased on the purchase order is a source of continuous friction between the accounting department and buyers who work primarily for the engineering or construction departments, for reasons that are easy to understand. It takes additional time and effort on the part of the purchasing agent to secure the prices, and it raises arguments between the purchasing agent and the supplier when discrepancies (which would never be found at all unless prices were listed on the purchase orders) are found by the accounting department and referred back to the signer of the purchase order.

However, in spite of vigorous contentions to the contrary by many buyers, pricing the purchase orders is definitely practical. It simply means that when negotiating the purchase (usually by telephone) the buyer will have to insist on price quotations even over objections on the part of vendors and their salesmen. Once it has been made clear that prices are required, they will invariably be supplied without question. In fact, insistence by management on the pricing of purchase orders has been known to discourage questionable side deals between buyers and salesmen.

Actually, provided the engineering and operations departments are as accounting minded as they should be, and the accounting department as operations minded as it should be, it makes little difference who controls the purchasing and expediting.

In one-man contracting firms there is no question of control. Almost invariably it is the owner who supervises purchasing. This does not mean, however, that the foregoing discussion is not significant to the small contractor. No one should pay bills without checking the prices and extensions on the invoices. Unless the contractor can remember the exact price of everything he buys, he has nothing against which to check prices. It takes only seconds to write down the price quoted when a purchase is being negotiated, and then there can be no question when it is time to pay the bills. In areas where the building material business is highly competitive, certain unscrupulous dealers have been known to quote prices at cost and make their profit through "errors" in pricing on the invoices.

Items to be bought

Materials and supplies are usually bought on the basis of a materials estimate for use on a specific job, regardless of the size of the contractor's business. The estimate may be a take-off from the plans or, as often happens on very small jobs, it may be based on the estimator's best guess as to what is needed (see "Materials budget," Chap. 9, Fig. 9.2).

If, as is done by plumbing, electrical, or similar specialty subcontractors or repairmen, an inventory is carried and purchases are made for inventory, it is usually good practice to keep "bin cards" (Fig. 9.4, 9.5). When withdrawals from a particular rack or bin bring the amount on hand below a predetermined quantity, the item is placed on the "want list" to be ordered the next time an order is placed.

Specialty purchases made to meet emergency job site needs have already been discussed in this chapter (see "The problem of pickup purchases").

The title of the person responsible for purchasing is not nearly so important as seeing that the responsibility for purchasing is clearly and definitely allocated.

The mechanics of buying

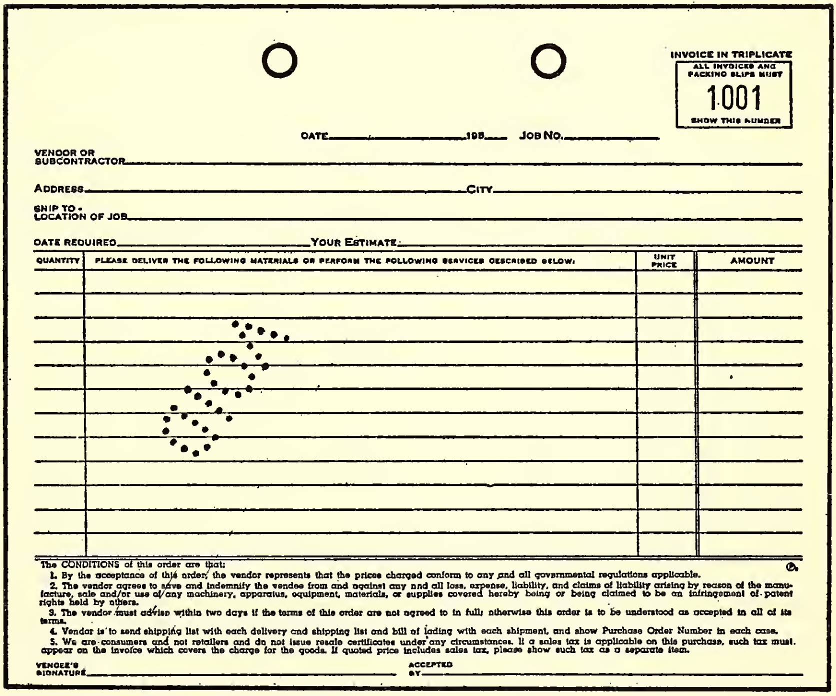
The buying process starts when someone with authority to spend the company's money decides that a purchase is necessary. It may be the owner of the business who goes to the building material dealer's yard and signs an order for whatever is needed. More often, even in very small concerns, the first step is the preparation of a "want list" or a materials estimate covering the materials and supplies needed for work in process or jobs about to start. When operations are a little larger, these want lists and rough materials estimates are formalized into a purchase requisition. Whether it be in the mind of the contractor himself or on a formal requisition, a list of the needed items must be accumulated somewhere.

The items must then be ordered from the appropriate supplier. It is common, among smaller contractors, for these orders to be placed by telephone, or over the counter of the lumber yard, the hardware store, or the materials dealer. So long as operations remain small enough, this informal procedure is satisfactory. There are few enough items on few enough jobs so that the details of each transaction can be remembered by the contractor, who in addition to doing the buying, checks the invoices and pays the bills.

Purchase orders (Fig. 5.1, 5.2) are needed as soon as the operations become large enough so that the person who checks the incoming invoices and pays the bills needs some way to check on what was bought, who ordered it, and the price agreed upon.

The actual buying starts with getting in touch with suppliers, securing quotations, and arranging terms for the purchase of requested items. When the terms are arranged, purchase orders are written and sent to the appropriate suppliers.

One copy of the purchase order is sent to the person who prepares the vouchers for payment. This copy will be compared with the invoice when it arrives, to check authorization, quantities, items, and



INVOICE IN TRIPLICATE

ALL INVOICES AND PACKING SLIPS MUST

1001

SHOW THIS NUMBER

DATE________________195__ JOB NO.__________

VENDOR OR SUBCONTRACTOR____________________

ADDRESS________________CITY________________

SHIP TO - LOCATION OF JOB____________________

DATE REQUIRED________________YOUR ESTIMATE________________

QUANTITY	PLEASE DELIVER THE FOLLOWING MATERIALS OR PERFORM THE FOLLOWING SERVICES DESCRIBED BELOW:	UNIT PRICE	AMOUNT

The CONDITIONS of this order are that:

1. By the acceptance of this order, the vendor represents that the prices charged conform to any and all governmental regulations applicable.
2. The vendor agrees to save and indemnify the vendee from and against any and all loss, expense, liability, and claims of liability arising by reason of the manufacture, sale and/or use of any machinery, apparatus, equipment, materials, or supplies covered hereby being or being claimed to be an infringement of patent rights held by others.
3. The vendor must advise within two days if the terms of this order are not agreed to in full; otherwise this order is to be understood as accepted in all of its terms.
4. Vendor is to send shipping list with each delivery and shipping list and bill of lading with each shipment, and show Purchase Order Number in each case.
5. We are consumers and not retailers and do not issue resale certificates under any circumstances. If a sales tax is applicable on this purchase, such tax must appear on the invoice which covers the charge for the goods. If quoted price includes sales tax, please show such tax as a separate item.

VENDEE'S SIGNATURE________________ ACCEPTED BY________________

Fig. 5.2 Purchase order

This form is designed to be typed in original and four copies: original to vendor; first copy to accounts payable; second copy to warehouse or receiving; third copy to purchasing department numerical file; fourth copy to purchasing department alphabetical file.

prices. Another copy goes to the place where the items will be received, and serves as a checklist on incoming shipments. Another copy goes to a numerical file, and the last copy is filed in a tickler file under the date when delivery is due. This last copy is ultimately filed alphabetically by vendor's name after the goods have been delivered. Until delivery, however, it is kept in the tickler file for follow-up. If there are indications that shipment may be delayed, an expediter, who may or may not be the buyer himself, works on the order to keep deliveries on schedule.

Purchase orders are designed principally to do three jobs:

1. Establish the responsibility for buying the things that are needed and only those things.

2. Tell the supplier in writing exactly what has been ordered; how, when, and where it is to be shipped and billed; how much the company expects to pay for it; any other information necessary to fill the order promptly and accurately.

3. Provide an internal check on purchasing, on receiving, and on the payment of money for items purchased.

Purchase orders should be prenumbered, and the numbers strictly controlled. If these two checks are not maintained, a good deal of the effectiveness of the purchase order is lost. The same is true of the authority to sign purchase orders. Unless limited to a comparatively small number of individuals, responsibility for purchasing becomes scattered, and purchasing becomes loose and wasteful. In some ways the responsibility which goes with the authority to sign purchase orders is even greater than that which goes with the authority to sign checks. Delegation of such authority deserves careful and serious consideration.

The mechanics of buying machinery and equipment are much the same as those of buying materials and supplies. However, the management decisions that lead to such purchases are somewhat broader in scope. The normal purchase of materials and supplies is made to meet the needs of a specific job or to maintain a complete and well balanced inventory. Equipment, on the other hand, may be bought for a particular job, but at the end of that job either it must be sold or there must be another job to keep it busy. For tax purposes, unless it is sold at the end of the job only a prorata share of its cost may be charged to job costs. Often equipment sitting idle in the contractor's yard is too expensive to keep and too valuable to sell at the prices that can be realized for it. Therefore, only those in the organization who understand the problems created by the ownership of equipment should have authority to sign orders for its purchase.

Expediting

Almost everything a construction company purchases must fit somewhere into a production schedule. Delivery too early creates problems (and generates costs) of storage and protection. Delivery too late means costly delays in completion. It is the job of the expediter to see that the things bought arrive on the job, as nearly as possible, at the exact time they are needed.

In larger concerns there are people who do nothing but expedite. In smaller concerns expediting is often another job for the buyer. Often it is one of the many tasks assigned to the job office manager.

Regardless of who does the expediter's job, it is important that he knows what he is trying to accomplish, and that he is not so loaded down with other more urgent duties that he has no time to expedite purchases.

Too often it is the erroneous belief of contractors that expediting and timekeeping jobs are to be assigned to people who lack the ability to make good anywhere else in the organization. When that idea prevails, expediting suffers and the job costs go up.

To do his job properly, the expediter must know exactly what has been purchased, when it is due to arrive on the job, and what will happen if it is not there on time. He needs to have day-to-day knowledge of progress on all jobs, and of shifts in production schedules. If materials are to be fabricated he must be able to go into the supplier's factory and identify the items on their way through production. He must be enough of a diplomat to keep supplier relations good; enough of a salesman to keep the supplier sold on giving as much priority as necessary to the company's orders; enough of a slave driver to apply as much pressure as needed to get suppliers and carriers to meet the company's production schedules. It is not essential that he be an engineer, but the training helps.

In order to anticipate job requirements properly, the expediter needs to study the production schedules, materials take-offs, equipment estimates, and purchase orders. He must catch and correct errors in scheduling the delivery of these items. He must maintain, or have available, a numerical register of purchase orders and a tickler file of unfilled purchase orders, arranged in the order of the "lead time" required to get the items delivered on time. These he must check systematically until he receives notice (usually a receiving report or similar memorandum) from the job that an order has been filled. He then moves the purchase order out of the tickler file into an alphabetical file, by vendors' names, of filled purchase orders.

There will be many purchase orders and purchase contracts that require no expediting effort, but those should still go through the expediter's hands so that his picture of the flow of materials will be complete.

Treatment of back orders

No discussion of purchasing or expediting would be complete without some comment on back orders. Often when a supplier is unable to supply one or two items on a purchase order, the remainder of the order will be filled and the missing items will be left open to be filled later. If the buyer has been careful to find out if the items ordered are available, back ordering will be held to a minimum, but even if there are only a few back orders it may often be necessary to buy the missing items elsewhere or to delay the job. Accordingly, as indicated in Chapter 9, it is better to prohibit all back orders and write a new purchase order for the items to come than to permit any back orders at all. Too often they are forgotten and the materials or supplies arrive after the need has long passed. If that happens they normally must be paid for, just as if they had been shipped on time. Even if they can be returned there are handling costs and shipping charges.

6

Subcontracting Policies and Procedures

There are few, if any, construction jobs on which some part of the work is not done by a subcontractor. Sometimes, on larger projects, the larger subcontractors will subcontract portions of their own work. This practice results in several "tiers" of subcontractors. The owner holds the prime contractor responsible for the entire job, even though some parts of it may be done by firms of which neither owner nor prime contractor have ever heard. In the same way, the prime contractor holds the first tier subcontractors responsible for their portion of the work. Where some of the first tier subcontractors have subcontracted a portion of their job to the second tier subcontractors, they look to the second tier subcontractors for a complete job, and so on down the line. Sometimes owners insist on approving the subcontractors used on their jobs, but it is unusual to find this degree of control extending past the first tier.

There are both practical and legal reasons why an owner rarely deals directly with a subcontractor, or a prime contractor with a second or third tier subcontractor. Legally, a subcontractor in any tier owes his duties under the subcontract only to the firm with which he contracted. From a practical viewpoint, dealings between the owner and a subcontractor would tend to relieve the prime contractor of responsibility for the subject matter of such dealings, and the same would be true of dealings between the prime contractor and lower tier subcontractors. Therefore, the chain of responsibility and authority in subcontract matters is observed with great care.

Reasons for subcontracting

There are a number of reasons why so many prime contractors subcontract portions of their work. First, in the plumbing, electrical, and painting trades, the subcontractors maintain an organization of skilled specialists, making it possible to do certain parts of the work better and more economically than might be done by someone less well specialized. In some regions, labor union contracts are so written that, except in emergencies, only specialty contractors can employ specialists in those trades. Also, relatively few general contractors have enough specialty work to keep a crew busy regularly.

Second, many specialists require equipment peculiar to the trade, and it is often more economical to subcontract the work than to buy or rent the equipment. Thus, many building contractors regularly subcontract their excavation and site preparation work rather than invest in very expensive earth-moving equipment.

Third, since contracting is a risky business and requires large amounts of capital, subcontracting is often used as a device to spread both the risk and the financial burdens of a large job.

From the subcontractor's point of view there are also advantages. It takes less capital to build up and equip a small crew of specialists than a large, diversified organization. The subcontractor receives many jobs that would be beyond his financial capacity were he to attempt to handle them as a prime contractor. Often, too, by associating himself closely with a few active general contractors he can keep his flow of work regular, even when some of the general contractors find themselves in a work slump.

In summary, then, it is advantageous to the prime contractor to subcontract the specialized parts of his work because the subcontractors, as specialists, can do the work better, faster, and as cheaply as the contractor could do it himself. Besides, from the prime contractor's point of view, the risk and the financial burden are spread. From the subcontractor's point of view, it generally requires a smaller investment and a smaller full-time organization to be a subcontractor.

Disadvantages of subcontracting

There are, of course, disadvantages on both sides, too. As soon as a prime contractor subcontracts a portion of his work, he sacrifices a certain amount of control over that part of the project. If things start to go wrong it takes longer to correct them, and the risks of delay and of disorganizing other parts of the job are increased. While some of the financial risk of the prime contract is passed to the subcontractors, the potential loss is greater and harder to guard against if the subcontractor proves to be financially unstable. Such a subcontractor can leave the prime contractor with a liability for unpaid bills relating to work for which the subcontractor has already been paid, and subcontractor's performance bonds can only partially guard against this risk.

From the subcontractor's viewpoint, the disadvantages are numerous and potentially serious. He must be able to recognize and protect himself against the all too common practice by certain owners and prime contractors of specifying inferior materials while demanding top quality results. This type of risk faces prime contractors too, and sometimes the prime contractor tries to avoid it by passing portions of the work on to subcontractors.

The subcontractor must be able to move on and off with jobs without loss of time or money, because he has to schedule his own operations to coordinate with those of the prime contractor and other subcontractors. He must be constantly alert to avoid situations in which an occasional unscrupulous prime contractor seeks to finance his entire job at the expense of his subcontractors. He must be prepared to combat attempts by the prime contractor to hedge against loss by holding the subcontractor's progress payments to a minimum. He must also exercise extreme care to see that the limits of his work are clearly defined, both in the initial subcontract and in connection with subsequent change orders. Otherwise he may find himself doing work he had not contemplated and for which he had made no allowance in his bid. Finally, if the prime contractor assumes a risk when a subcontractor fails financially, the subcontractor is also assuming a risk in connection with financial failure of the prime contractor. To hedge against such risks, the subcontractor must know (and watch) his lien rights on private work, and his statutory rights under the various bond acts on public work. The wide prevalence of subcontracting indicates that most subcontractors are fully aware of these hazards and have learned how to deal with them.

Subcontract coordination

Coordinating the work of the contractor and the various subcontractors on a job is essentially a job management function. Most written subcontracts give the prime contractor complete power to control the timing of the work done by subcontractors and it is usually the prime contractor's project manager or superintendent who makes the decisions.

Faulty coordination can create accounting, financial, and credit problems for the prime contractor. When, because of faulty planning, there is excessive delay in making final change orders, allowance must be made for the loss of job momentum. Otherwise unit costs will be distorted, and their usefulness will become extremely limited. When progress is delayed, so also are progress payments. Unit costs, on the other hand, tend to be higher than normal, so that financial planning and credit arrangements require re-examination. If the subcontract requires the subcontractor to wait until the completion of the whole job for the retention money, the delay in completing a poorly coordinated prime contract will require further changes in the subcontractor's financial planning.

One final problem in connection with subcontractor coordination is that which faces subcontractors when they bid. If a prime contractor's jobs are usually well coordinated, the subcontractor is reasonably safe in assuming that he can plan his work. If the prime contractor's jobs are frequently disorganized or poorly coordinated, it is good financial planning to add enough to the bid to cover both the excess unit costs and the excess finishing costs that may reasonably be expected. The idea that a subcontractor is morally bound to submit the same bid to all potential prime contractors on a job is not correct, if only for the reason given above.

Taking subcontract bids

From the prime contractor's viewpoint, there are relatively few matters connected with the taking of subcontract bids to concern the accounting or financial personnel. He should, however, determine, as far as he is able, whether the subcontractor will be financially acceptable, before issuing invitations to bid. It is wise practice to confirm telephone bids in writing immediately. It is up to the office manager to see that subcontractors are supplied with working area in which to make their take-offs from the plans in the prime contractor's possession, but dealings with the subcontractors on behalf of the prime contractor are usually carried on by the individuals who are preparing the prime contractor's bid estimate.

From the subcontractor's viewpoint, there are several matters which those responsible for accounting and finance should consider at the time bids are submitted. The first and most important consideration is the timing of progress payments. It is quite common for a subcontract to contain a provision that the subcontractor is not to receive payment until the prime contractor has been paid. If such a provision is present, then the payments to any individual subcontractor may be delayed by matters entirely beyond his control. In evaluating this risk, the reputation for prompt payments of the owner, the architect, and the prime contractor must be taken into consideration. If any one of the three has the reputation of delaying payments or holding them up on account of minor questions or arguments, that fact should be reflected in the bid price.

Second is a related consideration—payment of retained percentages. If the subcontract form requires the subcontractor to wait for his retention until completion of the entire job, the cost of providing the additional financing should be considered in the bid price.

Third, it must be determined whether performance or payment bonds will be required and, if so, at whose expense.

Fourth, the insurance requirements must be determined and, if additional coverage will be required, its estimated cost should be taken into the bid price. Particularly important are special risks that might affect compensation insurance premiums or that might require builder's risk insurance.

Fifth, if a job office is to be required, its staffing and equipment are matters of concern to accounting and financial personnel.

Sixth, while legal problems are usually not the direct concern of the accounting or financial personnel, it is the responsibility of these individuals to call the attention of the legal department to such problems when they arise. At the bidding stage, it may be remembered, a bid is an offer that, barring such considerations as "promissory estoppel," expires after a reasonable time and may normally be withdrawn at any time before acceptance. Moreover, an acceptance, to create a binding contract, must conform exactly to the bid, and attempts to bargain on any part of the bid will usually result in a counteroffer, which must then be accepted before there is a contract. If negotiations indicate that neither party expects to be bound until an integrated contract document is signed, there will ordinarily be no contract until the document is executed and delivered.

Seventh, if the products of a particular manufacturer are specified, for example, in door hardware, care must be taken to see that the supplier is in a position to provide such items. Often, "protected territory" arrangements between manufacturers and their local representatives give these representatives a virtual monopoly on certain types of items.

Eighth, in bids involving the supplying of materials or transportation of property, the persons taking the bids need to understand the application of state and local sales and use taxes, and state transportation taxes.

One of the most valuable contributions that a subcontractor's financial manager may make to bidding is that of objective analysis of the business aspects of each bid. There is a tendency for estimators, in their eagerness to secure new work, to accept unduly burdensome terms. Often a little informed pessimism on the part of the business manager produces profitable results.

Analysis of subcontract bids

When a large contract is being bid, prime contractors usually receive subcontract bids right up to the last minute. Once a prime contractor receives some indication that he may be awarded the contract, he immediately starts to analyze the various subcontract bids and bidders.

The evaluation of the bid and of the availability and technical qualifications of the bidders, their organizations, and their equipment, is a job for the estimators. The evaluation of the bidders' credit and the effect of their existing work loads on their ability to finance the job is the responsibility of the prime contractor's business manager or controller. It is at this time that the forecasting done by the subcontractors' accounting departments at the time that the bid was submitted can pay for itself.

A realistic and sensible financial forecast by the subcontractor can often convince the prime contractor that the subcontractor operates on a businesslike basis, and can often secure subcontract awards even against lower bidders. If the competitor's bid is so low that he is sure to lose money on the job there is a good chance that his performance will be unsatisfactory. Besides, overly competitive bidding sometimes indicates financial instability. One subcontractor who is not performing properly can upset planning, create delays, and sometimes turn a closely bid job from a profit to a loss. Even the limited protection of a performance bond cannot prevent a subcontractor's default from being costly to the prime contractor. For these reasons a prime contractor may pass up the lowest bidder and award the subcontract to another bidder whose bid is higher but who shows clearly that he knows how to plan his work well and is able to demonstrate that he is in a financial position to complete the job. This phase of the analysis of subcontractors' bids is usually up to the business manager or the controller of the prime contractor.

In analyzing bids it is important to distinguish between a subcontractor and a materials supplier. If the bid is merely to supply materials, a state sales or use tax may have to be paid in addition to the bid price, rather than being a part of it. For this reason, as well as a number of others, it may be desirable to use a contract form written especially for materials contracts instead of using the form written for subcontractors. Requirements will tend to differ from one state to another, and for that reason the contract form should be checked by legal counsel.

One other matter that would concern the accounting or financial personnel in a prime contractor's analysis of subcontractors' bids is transportation tax. Unless clearly spelled out to the contrary in the subcontract, federal transportation tax on hauling done for a prime contractor was formerly chargeable in addition to the subcontract price. Some state laws have similar provisions. Like the subcontract form, this matter must be checked by legal counsel in the state where operations will be carried on.

Many prime contractors, after taking subbids and analyzing them, will isolate those work items that have the lowest unit prices and award a subcontract which covers those items alone. Of course, the subcontractor is not bound to accept such a counteroffer, but there is always a temptation to do so, especially when work is scarce. This is not to say that subbids should always be made on an all or nothing basis. It simply calls for a thorough reconsideration of the bid as revised. Failure to do so can be very expensive if the subcontractor has unbalanced his bid. If a subcontractor intends that his bid must be accepted as a whole or not at all, the bid should say so. If a subcontractor is going to unbalance his bid, the price should, wherever possible, be stated as a lump sum bid so that there can be no breakdown on a counteroffer.

When a large building job is broken down and allocated to a number of subcontractors, questions of gaps and overlaps of responsibility inevitably arise. For example, if the excavation and site preparation is sublet to one subcontractor, and the sewers and drainage to another, and the paving to a third, who is responsible if the paving subsides and breaks due to faulty compaction in the sewer line trenches?

Is it up to the plumber or the roofer to provide the sheet metal flashings around the roof vents?

Obviously, this sort of problem can be covered by careful wording of the "scope" paragraphs of the subcontracts, so that laps and gaps are eliminated.

The prime contractor's accounting and financial departments become involved when the inevitable disputes arise over who is to do the work and how much is to be paid for it. When an overlap occurs, and the parties cannot agree on which subcontractor is responsible, it may be necessary for the prime contractor to do the work in order to avoid delaying the job. If the prime contractor intends to charge the cost of doing the work to one of the subcontractors, he should allow enough time for the subcontractor to undertake the work himself. Otherwise the prime contractor might find that legally he is a mere volunteer and unable to collect for the work done.

The subcontractor is saved untold cost and difficulty if the limits of his work are precisely defined. For that reason the subcontractor should take the initiative, if need be, to see that laps and gaps are eliminated. If a gap develops and the prime contractor demands that the subcontractor proceed with the work, the subcontractor may be better off if he does the work and at the same time takes the necessary legal steps to save his right to payment for an "extra." In such situations, the costs incurred in performing the disputed work must be recorded with the greatest care, and must be fully documented. The best procedure is to set up a separate work order to cover the disputed work and to document charges to the work order as if it were a separate, cost-plus job.

If a lap develops and one of the overlapping subcontractors does the work, the other subcontractor must be careful to see that any resulting change orders issued by the prime contractor do not make excessive deductions in price. In this connection, unit costs on comparable work from other jobs may prove useful. If the work involved in the overlap is profitable, it may be worth while for the subcontractor from whose contract the work is to be deleted to insist on the right to proceed with the disputed work, and to agree to its elimination only if adequate legal safeguards preserve his rights under the contract to the profit which he would otherwise have made on the deleted work.

Awarding the subcontracts

The first step in awarding a subcontract is a decision by the prime contractor on just what work is to be subcontracted. Because the extent and scope of the work may vary according to which subcontractor is chosen, it may be necessary to select the subcontractor at the same time the scope of the work is determined.

The most important consideration in choosing a subcontractor is whether he can do work of the required nature and quality at a competitive price. Usually a prime contractor is reasonably justified in taking this basic know-how for granted. Still, a mistake in judgment in selecting a subcontractor can be extremely expensive, and this fact alone justifies making the selection with more than ordinary care.

Next in importance after technical ability is financial ability. It has been noted before that the two major limitations on a contractor's ability to undertake new work are his organization and his available working capital. If a subcontractor is lacking in either respect, the prime contractor may have to share the former's difficulties. How much total money or bonding capacity the subcontractor may have is immaterial. It is the amount he has available for the particular job that counts. It becomes the job of the prime contractor's accounting department, therefore, to analyze the subcontractor's credit reports and his accounting or financial statements in considerable detail to determine his financial responsibility.

In making such analyses, net working capital is a key figure. According to some bonding companies, a building contractor can carry between $15 and $20 of uncompleted work for each dollar of net working capital, or $10 of uncompleted work for each dollar of net worth. Naturally, the ratios vary according to individual circumstances. For example, compare the position of Contractor A with that of Contractor B, as shown by their balance sheets in Schedule 6.1.

On the statements alone, Contractor A is clearly in the better position of the two. His ratio of uncompleted work ($100,000) to net working capital ($12,500) is only 8 to 1, compared to 20 to 1 ($100,000/$5,000) for Contractor B. Contractor A's ratio of uncompleted work ($100,000) to net owner's equity ($27,500) is something under 3.7 to 1, while B's comparable ratio is 5 to 1.

However, suppose that on analysis the following facts came to light:

1. A has, in his backlog of work, a job that will lose as much as he makes on all his others, so that his overhead for the next few months will be carried from his working capital instead of from job profits. Assume that this loss of working capital can be valued at about $7,500.

2. Of the $20,000 of retained percentages shown as a current asset for A, there is one item of $10,000 tied up in a dispute that will probably not be settled for a year.

3. The unencumbered real estate on B's balance sheet is worth $30,000 and the bank will loan $20,000 on it without question.

SCHEDULE 6.1/SUBCONTRACTOR FINANCIAL CONDITION

	Contractor A	*Contractor B*
Uncompleted work on hand	$100,000	$100,000
	Balance sheets	
Cash	$ 3,000	$ 5,000
Progress billings currently due	6,000	10,000
Retained percentages	20,000	5,000
Inventory		
Materials, supplies	7,000	4,000
Equipment parts	4,000	1,000
Prepaid expenses	4,000	3,000
TOTAL CURRENT ASSETS	$ 44,000	$ 28,000
Notes payable	$10,000	$ 9,000
Trade accounts payable	9,000	7,000
Payroll taxes, insurance, etc.	6,000	3,000
Equipment installments	6,500	4,000
TOTAL CURRENT LIABILITIES	$ 31,500	$ 23,000
NET WORKING CAPITAL	$12,500	$ 5,000
Equipment (net)	$50,000	$ 50,000
Less: Long-term equipment contracts	(45,000)	(45,000)
Real estate	50,000	10,000
Less: Long-term loan	(40,000)	—
Other Assets (net)	$ 15,000	$ 15,000
OWNER'S EQUITY	$ 27,000	$ 20,000

Such facts would change the picture completely. Contractor A's $12,500 net working capital is overstated for this purpose by some $17,500, leaving him with a negative net working capital ($12,500 —$17,500 equals a minus $5,000). Contractor B, on the other hand, has a hidden resource of $20,000 so that, if the need arose, his net working capital of $5,000 could be increased to $25,000.

Under such circumstances, and with other things approximately equal, it would probably be safer financially to award any proposed work to B.

A third factor to be considered in selecting a subcontractor is the subcontractor's reputation for maintaining a work schedule. Primarily, the purpose for this requirement is to prevent delay on the jobs. In addition, however, a subcontractor who is behind in his work is also, as a rule, behind in his payment of bills, thus creating a lien risk for the prime contractor that can be avoided by careful selection.

Negotiating the subcontract

Usually, subcontracts are negotiated by the principals or by the operating or engineering personnel of the prime contractor and subcontractors. Operating men and engineers are certainly capable enough so far as the scope of the work and the prices are concerned. Too often, however, they are inclined to brush off a good many important details as "fine print." This attitude they will justify with the sound observation that, "if a man's word is no good, neither is his contract." Still, disagreements do arise, even between honest men. Sometimes, too, a contractor may think he is dealing with an honest man when, in fact, he is not. When things go wrong, both parties will go to the so-called "fine print." When the point at issue is covered in the contract, the questions are usually settled. It is when there has been no coverage of a point in the contract that the parties find themselves in court.

It is often up to the business manager or controller to see that the final contract documents are complete and that all important matters have been covered. Schedule 6.2 provides a list of questions which should prove helpful in such an analysis.

SCHEDULE 6.2/CHECKLIST FOR SUBCONTRACTS

1. Are the names and addresses of the parties correctly stated?
2. Is the form of business organization of each party correctly stated? For example: "a sole proprietorship," or "a partnership consisting of X and Y," or "a limited partnership of which X and Y are the general partners," or "a California corporation."
3. Are all important terms either defined or used in such a way that their meaning is entirely clear?
4. Is the work to be done described completely and accurately? If copies of documents, plans, drawings, and so on are to be furnished, are they actually incorporated by reference? Who is to pay for them?
5. Who is responsible for obtaining and submitting shop drawings?
6. Who owns the plans, drawings, and models furnished?
7. If samples are to be submitted, to whom do they belong?
8. If patented processes or devices are to be used, who pays the royalty?
9. Does the subcontractor pay for lights, water, power, transportation, and similar facilities? If any of these are to be furnished by the prime contractor, will he bill the subcontractor, and if so, on what basis?
10. Who is responsible for lines, grades, and surveys?
11. If special licenses or permits are required for the subcontractor's work, does the subcontractor have the duty of seeing that these are obtained?

SCHEDULE 6.2/CHECKLIST FOR SUBCONTRACTS (Cont.)

12. To what extent does the subcontractor assume the responsibility to protect the work, the public, and the owners of adjacent property from loss or damage?

13. Has the subcontractor agreed to the same standards of supervision and inspection as those imposed on the prime contractor? To whom must the work be satisfactory?

14. Has the subcontractor agreed to the same provisions regarding change orders as those in the prime contract? Are there satisfactory provisions for negotiating the price of the changes? Is provision made for the subcontractor's claims for the cost of excessive delay in issuing change orders or for the cost of complying with special instructions requiring costs beyond those originally contemplated?

15. Have satisfactory provisions been made for correcting unsatisfactory work?

16. Are satisfactory provisions made for delays and extensions of time?

17. Are the provisions for notice to the subcontractor's bonding company of change orders, time extensions, and payment of funds liberal enough to prevent unintentional release of the surety?

18. Do the guarantee provisions of the subcontract have the same coverage as those in the prime contract?

19. Does the subcontract contain the same provisions as the prime contract regarding the owner's privilege to do work which the contractor has done unsatisfactorily, and does the prime contract have a similar privilege with respect to the subcontractor's work?

20. Does the prime contractor have the same power to terminate the subcontract as the owner has to terminate the prime contract?

21. When, and on what basis, does the subcontractor receive progress payments? Is there any relationship between the owner's payments to the prime contractor and the prime contractor's payments to the subcontractor? Would acceleration of the subcontractor's payments release his bondsmen? Is he required by the terms of the contract to apply such payments first to payment of bills incurred in connection with the job? Is the subcontractor entitled to require that progress payments be made even though some of his accounts with his suppliers are delinquent?

22. When, and on what basis, does the subcontractor receive his retained percentage? Must he wait until the entire job is completed and accepted? If so, would payment in advance release his bondsman?

23. To what extent must the subcontractor carry:
    a. Workmen's compensation insurance
    b. Public liability and property damage insurance
    c. Fire, storm, earthquake, builder's risk, or other similar types of insurance?

24. Is the subcontractor required to furnish a performance and payment bond? If so, who pays for it? If not, is there adequate protection against liens or comparable statutory liabilities?

Individual
Proprietorship

Los Angeles, California
..............19....

RELEASE

KNOW ALL MEN BY THESE PRESENTS, that..................
of...
an Individual, for valuable consideration, the receipt whereof is hereby acknowledged does for himself and his successors in interest and assigns, hereby release and forever discharge the Prime Company, a California Corporation, Prime Contractor, and their successors and assigns, for the construction and completion of.................................
....
at...
from all actions, debts, accounts, bonds, covenants, contracts, agreements, damages, claims, and demands whatsoever, in law or equity, which have arisen or may arise out of or by reason of, or which are based on that certain contract executed on the ....day of............19...,
by and between the said Prime Company and the undersigned, or which have arisen from or by reason of any cause, matter or thing whatsoever.

The undersigned further releases the owner and the owner's property from any claim of any kind on account of work performed or materials furnished in connection with the above referred to contract, or in connection with construction on above referred to project.

The undersigned further warrants that he has paid and satisfied all claims for labor and materials used by him for or in connection with the work under the said contract. The undersigned further hereby agrees to indemnify and hold the aforesaid persons, firms and corporations free and harmless from any and all such claims and any and all expenses including attorney's fees, which may be incurred in contesting or adjusting any thereof.

IN WITNESS WHEREOF, the said............................
has caused these presents to be executed the day and year first above written.

....
....

Subscribed and sworn to before me this ....day of...........19....

....
Notary Public in and for the county of
.......................State of.......................

Fig. 6.1 Release form

This form is for use by an individual proprietorship, but with slight modifications in language it could be used by any other form of business organization, such as partnership, corporation, and so on.

SCHEDULE 6.2/CHECKLIST FOR SUBCONTRACTS (Cont.)

25. Does the subcontractor agree to hold the prime contractor harmless for damages caused by the subcontractor's operations, and vice versa?

26. Is the prime contractor's duty to pay the final payment and the retained percentage conditional upon his receiving a release of liens from the subcontractor (Fig. 6.1) ?

27. Are the agreements regarding assignments of rights and delegations of duties under the subcontract satisfactory?

28. Does the subcontractor agree in general terms to be bound by, and to bind his subcontractors to, all applicable terms of the prime contract?

29. Does the prime contractor reserve the right to approve or disapprove any subcontracts made by the subcontractor covering the work on this job?

30. Does the subcontract contain the same provisions regarding arbitration as the prime contract? Should it contain such provisions?

31. Does the subcontract state in so many words that there are no outside understandings, representations, or agreements?

32. Are there adequate and satisfactory provisions covering cleanup at the job site?

33. Who pays lawyers' fees and legal expenses in the event of litigation caused by breach on the part of either party?

34. In the event of default by the subcontractor, does the prime contractor, or his nominee, have the right to take over and use for the purposes of completing the subcontractor's work, all materials, supplies, equipment, and facilities which the subcontractor has on the job?

35. Does the subcontract require the subcontractor to include in his subcontracts and purchase orders language permitting the prime contractor to take them over for purposes of completion should the subcontractor default?

36. If either the prime contractor or the subcontractor abandons the project, are there adequate provisions for the protection of the other party?

37. If, through action of one party in legal or labor matters, or for other reasons unrelated to the other party, the job is shut down to the detriment of the other party, are there satisfactory arrangements for dealing with losses thus caused?

In all cases, the prime contractor ought to assure himself that the subcontractor fully understands the provisions of his subcontract, and be sure that he is able to establish that the subcontractor's understanding is complete. The temptation is strong to slide rather gently over touchy points in the hope that they may not arise or, if they do, that they can be ironed out. The prime contractor's representative needs to remember that contract documents are usually strictly construed against the party that prepares them. If feasible, the subcontractor should be given a copy of the general conditions at the time he makes his take-off from the plans. Then when the contract is being negotiated, these general conditions should be reviewed to assure complete understanding.

The form and content of the subcontract document will vary as widely as the work to be covered. The checklist of 37 points given in Schedule 6.2 indicates some of the issues to be covered, but no universally accepted form could be drawn because of the wide variation in actual circumstances. If a prime contractor is preparing a form, it should be reviewed by his attorney before being used. The standard subcontract forms sold by stationers are rarely complete, applicable, or entirely satisfactory. The most satisfactory procedure is for each prime contractor to have his own subcontract forms prepared to fit his subcontracting policies. Each subcontractor, in turn, should have in mind (or better yet, on paper) the basic terms to which he will agree, and then place a value in money on any important deviation from those terms.

It is generally good policy to have the subcontract document signed before work commences. If that is not practical, then the subcontractor is entitled to a "letter of intent" or a "notice to proceed" signed by the prime contractor or someone authorized to act for him.

From the prime contractor's point of view, particular care should be taken to see that the contract is signed by, or on behalf of, the person or company to which the prime contractor is looking for performance. It is fairly common for a manufacturer of national reputation and unquestioned credit to appear as a bidder and then return the subcontract signed by some local distributor whose capacity is so limited as to invite suspicion. In such circumstances, the prime contractor should either insist on the guarantee of the manufacturer or, as a minimum procedure, require a performance and payment bond.

It is customary for subcontracts to incorporate, by reference, the plans, specifications, drawings, addenda, and so on mentioned in the prime contract. Such comprehensive reference ensures that the subcontract is complete and covers all the requirements contained in documents that may not have been made available to the subcontractor. Therefore, if a subcontractor is to be held responsible for knowing the contents of all the plans, specifications, drawings, addenda, and other documents, he should be careful to see that he has studied them for all matters that might affect his work. It is equally important that the prime contractor be very sure he is able to establish that they were available to the subcontractor for such study.

Once the subcontract is awarded, it is up to the prime contractor to see to it that proper notice is given to the subcontractor and to appropriate members of the prime contractor's organization. When a prime contractor uses the same subcontractors regularly, many of the foregoing details can be eliminated, especially those associated with giving notice. However, it is easy to let long association lead to unbusinesslike practices. To avoid such a situation, even the smallest operators might well review their practices in the light of the suggestions of this chapter. Mere smallness does not necessarily justify failure to take reasonable and businesslike precautions in dealings between prime contractors and subcontractors, nor does it justify a blind reliance by the subcontractor on the forms and procedures of the prime contractor.

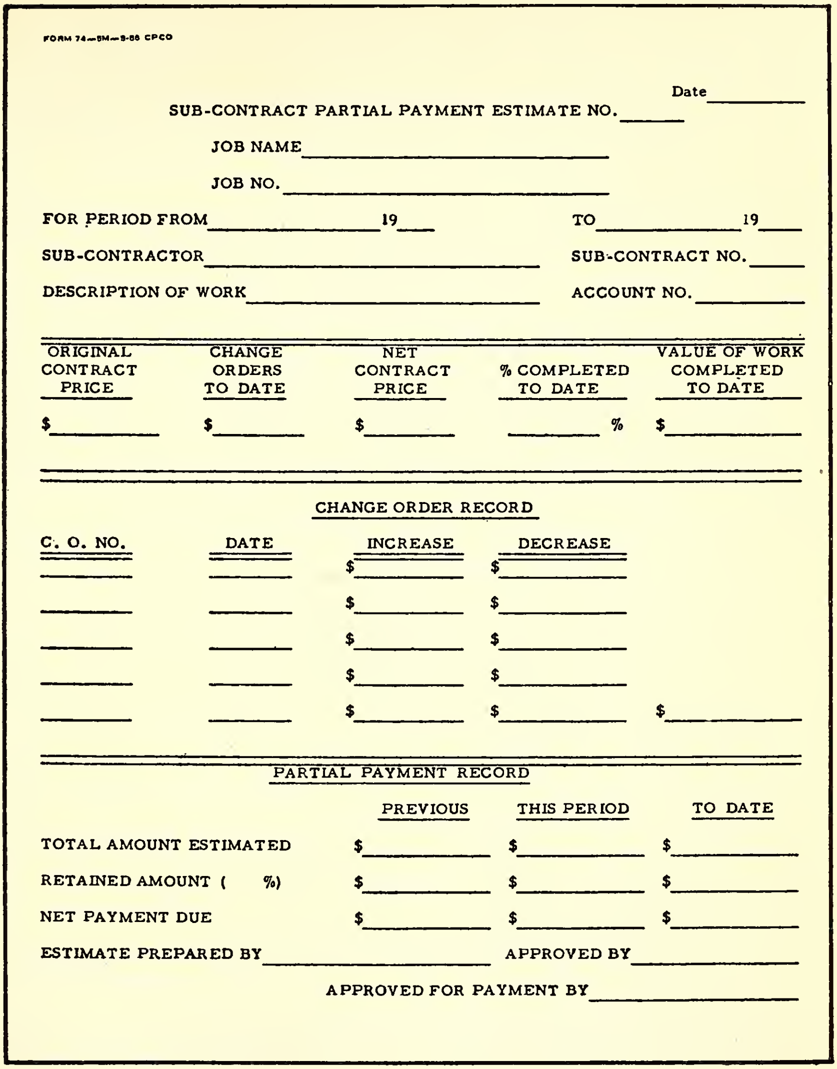
Payments to subcontractors

It is customary for the subcontract to call for progress payments to be made to subcontractors as soon as the prime contractor receives payment for the work, and in the same proportion. The subcontractor's partial payment estimate (Fig. 6.2) is a useful form, for inclusion in payment vouchers, that summarizes the payment position of each subcontractor.

Payment to the subcontractor only after the prime contractor has been paid has the disadvantage to the subcontractor of requiring him to wait until the whole job is completed before receiving his retention. If the subcontractor wants to collect his retention before final completion and acceptance, he should see that his right to payment at an earlier date is spelled out in the subcontract.

Often the prime contractor's field engineer will try to pay subcontractors less than the amounts requested and received by the prime contractor from the owner for the subcontractors' work. If the subcontractor has been alert at the time of negotiation, the subcontract itself will require that payments to the subcontractor be based on the same percentage of completion as that agreed upon by the prime contractor and the owner.

For the prime contractor to attempt to underpay the subcontractor may be shortsighted. It is true, of course, that if subcontractors are consistently underpaid there will be a greater margin of safety in case of default. On the other hand, a policy of underpaying subcontractors could bring about defaults that otherwise might be avoided. Also, this practice sometimes misleads the prime contractor in his cash forecasting. Certainly such a policy cannot have a healthy effect on future bids received from the subcontractors affected. If a prime contractor is going to unbalance a payment request, it is better, if possible, to avoid doing it with subcontracted work items.



FORM 74—5M—3-56 CPCO

Date ____

SUB-CONTRACT PARTIAL PAYMENT ESTIMATE NO. ____

JOB NAME ____

JOB NO. ____

FOR PERIOD FROM ____ 19 ____ TO ____ 19 ____

SUB-CONTRACTOR ____ SUB-CONTRACT NO. ____

DESCRIPTION OF WORK ____ ACCOUNT NO. ____

ORIGINAL CONTRACT PRICE	CHANGE ORDERS TO DATE	NET CONTRACT PRICE	% COMPLETED TO DATE	VALUE OF WORK COMPLETED TO DATE
$	$	$	%	$

CHANGE ORDER RECORD

C. O. NO.	DATE	INCREASE	DECREASE	
		$	$	
		$	$	
		$	$	
		$	$	
		$	$	$

PARTIAL PAYMENT RECORD

	PREVIOUS	THIS PERIOD	TO DATE
TOTAL AMOUNT ESTIMATED	$	$	$
RETAINED AMOUNT (%)	$	$	$
NET PAYMENT DUE	$	$	$

ESTIMATE PREPARED BY ____ APPROVED BY ____

APPROVED FOR PAYMENT BY ____

Fig. 6.2 Summary of subcontractor's partial payment estimate

This form is designed for separate computation of percentage of completion on change orders. If this procedure is not followed, changes can be lumped into one amount or the work items can be adjusted to take the changes into account.

The subcontract should provide that when the retained percentage is paid, a "release" (Fig. 6.1) will be given by the subcontractor. When final payment is made to a bonded subcontractor, the prime contractor should notify the subcontractor's bonding company, and similar notice should be sent by the subcontractor when the payment is received.

Breach of a subcontract

Breach of contract is a legal matter and should be taken up immediately with the company's attorney. In fact, if a breach appears possible or probable, the attorney should be consulted beforehand. If the breach involves a stoppage of work by the subcontractor, regardless of who may be guilty of the breach, the following steps should immediately be taken by both parties.

1. Complete and detailed progress photographs should be taken by an independent professional photographer, preferably one familiar with construction and with the use of photographs as evidence in court. The photographer and the attorney should work together closely on this project, and it is desirable that the attorney be present while the photographs are being taken.

2. Both the contractor and the subcontractor should prepare a complete and detailed inventory of the materials, supplies, and equipment that the subcontractor has on the job.

3. Both the contractor and the subcontractor should make careful and detailed engineering estimates and measurements of those parts of the subcontractor's work that remain to be done. Since questions of faulty materials and workmanship are almost certain to arise, the work that may be questioned should be inspected with extreme care and detailed notes made of its exact extent and condition. If some independent expert can make the examination and render the report, so much the better.

4. If the terms of the subcontract require arbitration of disputes, and if there is no way to avoid the requirement, it is a good idea for the individual contractor to analyze his position carefully to see where his best interests lie. If his legal position is strong, he should seek an arbitration board of lawyers, but if, on the other hand, his legal position is weak and his case depends on the equities of the construction facts, he should try to have construction men on the panel. Because the combination of legal and construction knowledge is rare, it is often true in practice that arbitration in the construction industry is unsatisfactory. Usually the interests of the prime contractor do not lend themselves to arbitration whereas the interests of the subcontractor often do.

When the subcontract is breached by failure of the prime contractor to pay amounts due under the subcontract, the subcontractor needs to move promptly to protect his rights. If the owner is a private individual or business firm, the remedy lies with the state lien laws. If the job is being done for a state or local government body, the remedy is usually a "stop notice" under the state bond laws, followed by a timely suit to enforce the claim. If the job is being done for the federal government, the remedy is under the Miller Act—the Federal Bond Act of 1935.

Lien laws and bond acts are for the protection of contractors, workmen, materials suppliers, and others who contribute directly to the work on a construction job. These laws are highly technical in their application, and, generally speaking, they are strictly interpreted. Therefore, as soon as any payment, and particularly a final payment or retention, becomes delinquent, the contractor should consult his attorney at once, so that there will be time to act before the relatively short limitation periods run out. One other fact must be mentioned. In a dispute on a construction contract there is no substitute for a complete, well-kept job diary, maintained by the person responsible for the work, and written in his own handwriting. All project managers, superintendents, and job engineers should be required to maintain such a record daily.

Prime contractors frequently require that subcontractors furnish a performance and payment bond, and there is a tendency to feel that such a bond constitutes full protection against default by the bonded subcontractor. However, this view is only partially true. If the subcontractor goes bankrupt or makes an assignment for benefit of creditors, the bonding company will normally pay the loss (though usually not the attorney's fees) without much question. If, on the other hand, the subcontractor merely abandons the job and fails to pay his suppliers, it is the prime contractor who must complete the job and pay the bills or suffer the consequences. If the prime contractor sues and obtains judgment against the subcontractor, the bonding company will reimburse the costs up to the limits of its liability, but the bonding company will not act before the subcontractor's legal liability is established lest it lose its right to be reimbursed by the subcontractor. This restraint can put the prime contractor to the trouble and expense of a lengthy lawsuit in addition to the trouble and expense that are the normal result of a default. Often it is better for the prime contractor, under such circumstances, to accept a substantial loss and settle, rather than to pursue either arbitration or litigation.

7

Change Order Routines

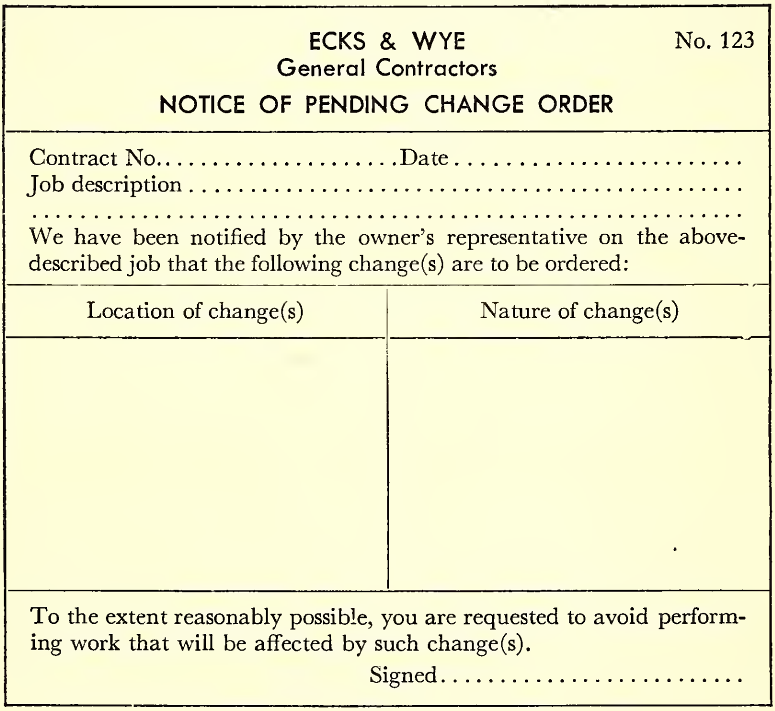
Most construction contracts make provision for changes in plans, specifications, amount of work to be done, completion time, and total amount to be paid. Legally (barring provisions to the contrary in the contract) there is no reason why such changes may not be made on oral instructions to the contractor. From a practical viewpoint, oral change orders are an open invitation to disputes and often to litigation. Ordinarily, an experienced contractor will refuse either to give or accept such oral instructions.

Change orders create both problems and opportunities for the contractor. When there are too many of them, they slow down the job and increase the unit costs. Also, when change orders cause delay in completing the job it is necessary to obtain time extensions in order to prevent assessment of liquidated damages. On the other hand, they offer opportunities to negotiate changes in the contract price which can prove quite profitable. The best way to take advantage of the opportunities and avoid as many of the problems as possible is to develop a routine for handling changes.

Changes in the prime contract

When the owner's representative notifies the prime contractor that a change is to be made, the prime contractor should stop as much as possible of the work that would have to be torn out or changed if the order were actually issued. He should also notify his subcontractors to take the same steps. The procedure may be reduced to routine by a "notice of pending change order" (Fig. 7.1).

Under ideal circumstances, all the necessary plans and drawings would be available for immediate preparation of a change estimate and negotiation of the change order. It is often necessary, however, to delay the entire change until the necessary drawings and specifications are ready or to go ahead with the work under a "notice to proceed" and leave negotiations of the formal change until later.



ECKS & WYE
General Contractors
NOTICE OF PENDING CHANGE ORDER

No. 123

Contract No....................Date........................
Job description..
....

We have been notified by the owner's representative on the above-described job that the following change(s) are to be ordered:

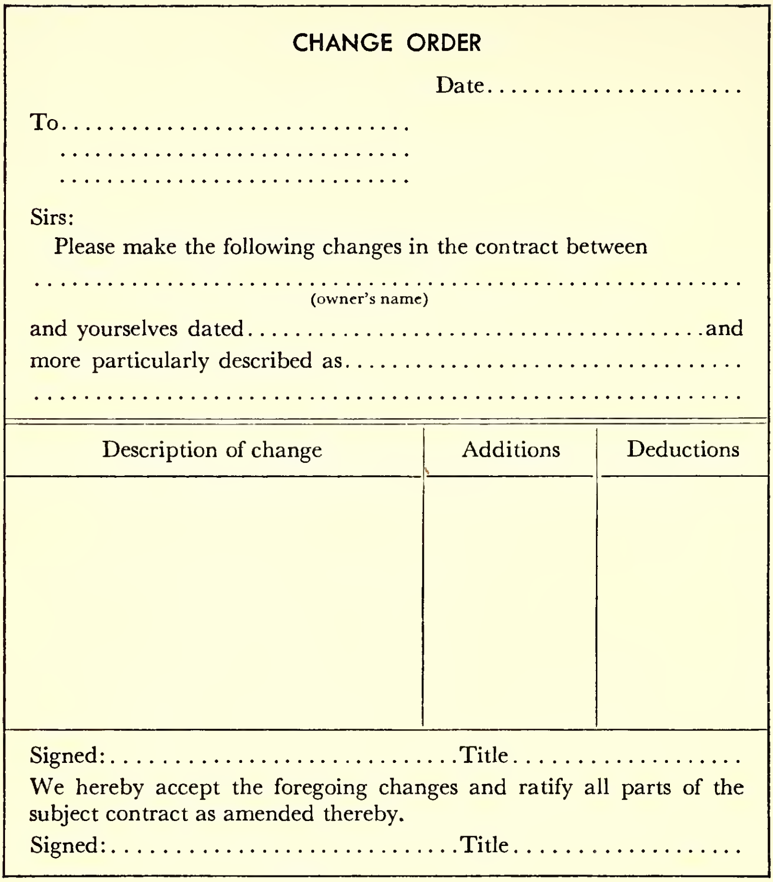
Location of change(s)	Nature of change(s)

To the extent reasonably possible, you are requested to avoid performing work that will be affected by such change(s).

Signed........................

Fig. 7.1 Notice of pending change order

When the notice to proceed is used, it is better, in any event, to go ahead with the normal routine of preparing a change order (Fig. 7.2) signed by both parties. However, if work on the change starts before the formal change order is issued, a work order (Fig. 7.3) should be prepared.



CHANGE ORDER

Date......................

To..............................

....

....

Sirs:

Please make the following changes in the contract between

....

(owner's name)

and yourselves dated.....................................and

more particularly described as.................................

....

Description of change	Additions	Deductions

Signed:..............................Title....................

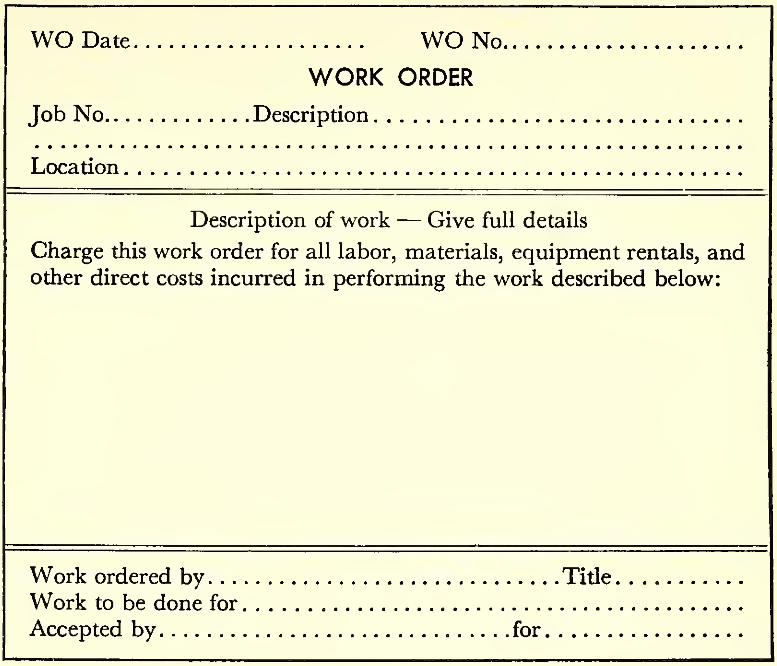
We hereby accept the foregoing changes and ratify all parts of the subject contract as amended thereby.

Signed:..............................Title....................

Fig. 7.2 Change order

This form is prepared in quadruplicate on $8\frac{1}{2} \times 11$ in. paper. The original is accepted and returned to the owner by the contractor. The first copy is retained by the contractor. The second copy is sent to the job office. The third copy is sent to the architect.

As soon as notice of a pending change order is received, a change estimate number should be assigned and a change estimate file (Fig. 7.4) should be set up. In this file are placed all working papers and other data supporting the change estimate (Fig. 7.5). Before negotiation of the change order is completed, the estimate may be revised one or more times.



WO Date.................... WO No.....................

WORK ORDER

Job No.............Description..............................

....

Location..

Description of work — Give full details

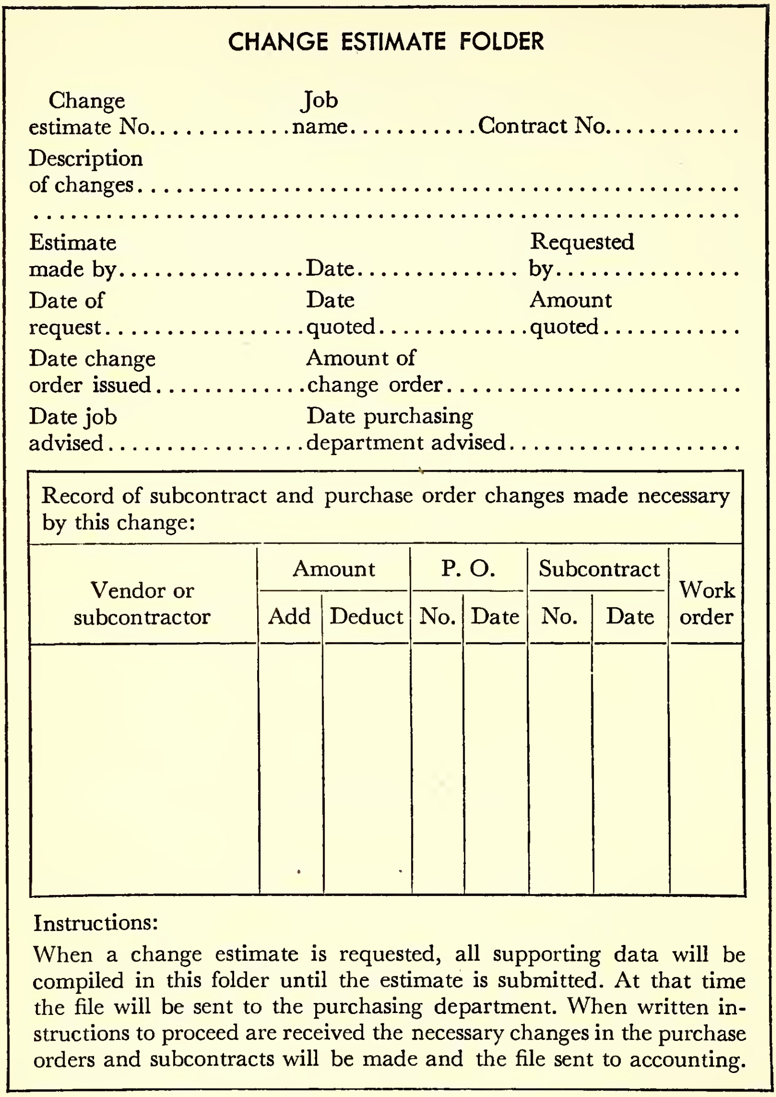
Charge this work order for all labor, materials, equipment rentals, and other direct costs incurred in performing the work described below:

Work ordered by..............................Title...........
Work to be done for...
Accepted by..........................for.................

Fig. 7.3 Work order

This form is prepared in quadruplicate on 8½ × 11 in. paper. The distribution is: original to the person or firm that is to do the work; first copy to the person ordering the work; second copy to the job office; and third copy to the architect. This same form may be used to cover extra work requested by the prime contractor from the subcontractor or vice versa, as well as to compile costs on a pending change order.

When the change order affecting the contract price is issued, the job estimate should be adjusted accordingly. As a practical matter, this is rarely done more than once each week or, more commonly, once or twice a month. There are two ways in which changes affecting the price may be reflected. First, they may be treated separately, as if each were a separate work item. Second, they may be reflected by a direct adjustment of the work items. When the changes are few, it makes little difference which method is used. When they are numerous, it may be necessary either to incorporate them into the related work items or to lump them together into "additive changes," "deductive changes," and "changes not affecting initial work items."



CHANGE ESTIMATE FOLDER

Change estimate No. . . . . Job name. . . . . Contract No. . . . .

Description of changes. . . . .

. . . .

Estimate made by. . . . . Date. . . . . Requested by. . . . .

Date of request. . . . . Date quoted. . . . . Amount quoted. . . . .

Date change order issued. . . . . Amount of change order. . . . .

Date job advised. . . . . Date purchasing department advised. . . . .

Record of subcontract and purchase order changes made necessary by this change:

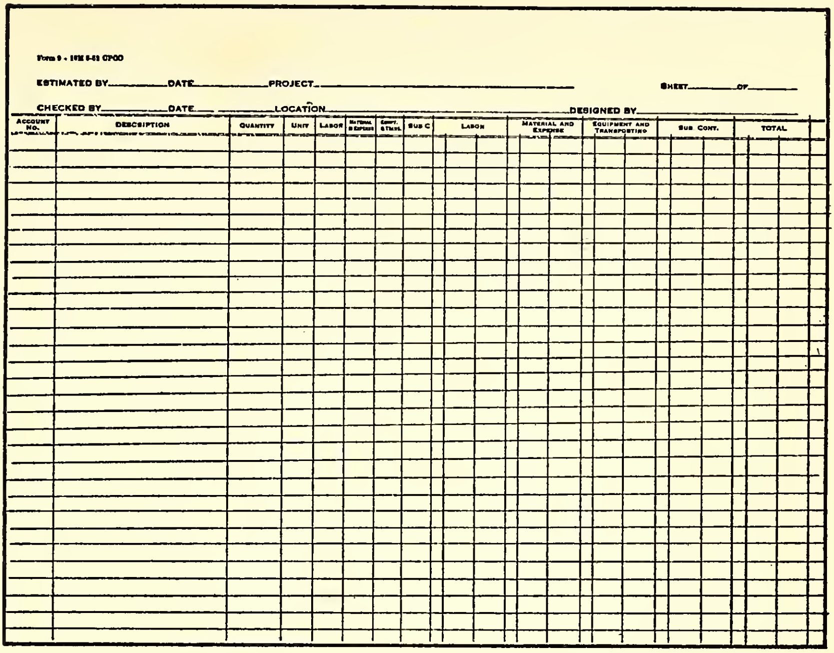
Vendor or subcontractor	Amount		P. O.		Subcontract		Work order
	Add	Deduct	No.	Date	No.	Date	

Instructions:

When a change estimate is requested, all supporting data will be compiled in this folder until the estimate is submitted. At that time the file will be sent to the purchasing department. When written instructions to proceed are received the necessary changes in the purchase orders and subcontracts will be made and the file sent to accounting.

Fig. 7.4 Change estimate folder

This 8½ × 11 in. tagboard folder is used to accumulate all the documents supporting a change estimate. If the job is large enough to require a job engineer the estimate is usually prepared on the job. Otherwise, it is prepared in the contractor's office. The use of such a folder will generally not be justified on very small jobs, but in this event some record must be kept to ensure that subcontractors are notified of any changes in their work.



Form 9 - 10M 8-61 CPOO

ESTIMATED BY________ DATE________ PROJECT________________ SHEET______ OF______

CHECKED BY________ DATE________ LOCATION________________ DESIGNED BY________

ACCOUNT NO.	DESCRIPTION	QUANTITY	UNIT	LABOR	MATERIAL & EXPENSE	EQUIPT. & TRANS.	SUB C	LABOR	MATERIAL AND EXPENSE	EQUIPMENT AND TRANSPORTING	SUB CONT.	TOTAL

Fig. 7.5 Change estimate

Change order estimates are often required when the cost of the change is an important factor in deciding whether the change is to be made.

Of course when the contract provides, as some do, for separate billing of each change order, then the overhead included in the price should be sufficient to cover the extra cost of separate billing. Change order overhead is a very touchy subject, because most owners and their representatives are likely to feel that any overhead charge on a change order is excessive. From the contractor's viewpoint, overhead is a very real cost in change orders, and its addition should be vigorously defended.

When a change order is issued there are several ways in which it can affect job accounting:

1. If the amount budgeted for each work item is adjusted to reflect change orders, then the total contract price and percentage of completion, by work items and in the total, will be changed. This change must be carefully noted.

2. If, in computing the amounts of progress payments, the contract requires that change orders must be accounted for as if they were

separate work items, there is a problem of segregating costs. For example, if a change order merely increased the number of cubic yards of earth to be removed from a particular excavation, or increased the number of times a certain concrete form could be used, it would be necessary for the job accountant to segregate the costs applicable to the principal work item from those applicable to the change order.

3. Some change orders would not affect the contract price and others would not affect any existing work item. The former would have no effect on accounting, and the latter would add another page to the cost ledger, regardless of whether the procedure in use calls for the adjustment of the budgeted amount for existing work items.

Changes in subcontracts and purchase orders

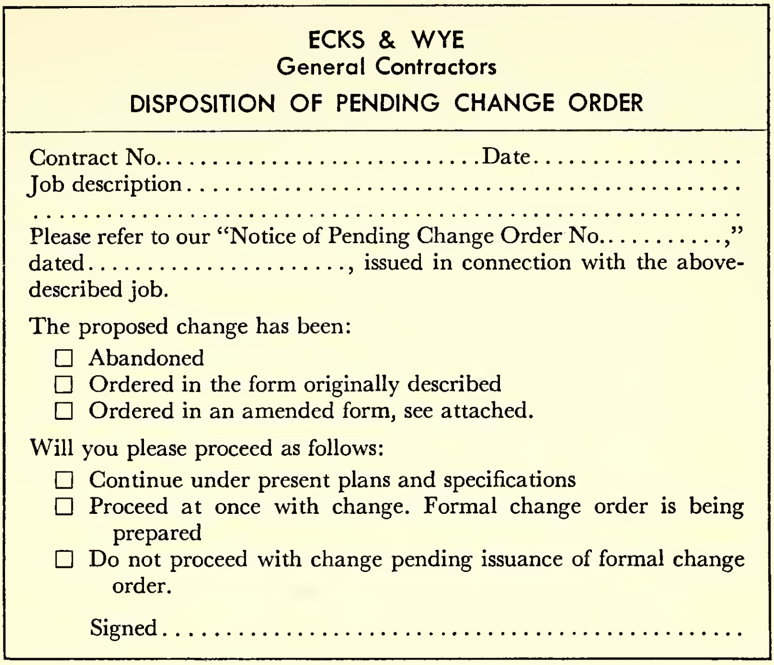
Prime contractors, and subcontractors who have sublet a portion of their subcontracts, are constantly facing the problem of determining to what extent, if any, a change in their work will affect their subcontractors. Usually this determination is made when the original change estimate is prepared, but there still remains the job of following through and issuing change orders to the subcontractors. The rulings on the face of the change estimate folder (Fig. 7.4) are designed to give a measure of control.

The same follow-up needs to be carried out for materials purchase orders as well as for subcontracts. It is a good idea, whenever practical, to put copies of the subcontract change orders and the changes on purchase orders in the change estimate folder. When it is not practical, it is necessary to have some cross reference to the change order and purchase order files.

Once a proposed change order has been either abandoned or definitely ordered, a "disposition of pending change order" form (Fig. 7.6) should be given to the subcontractors. A similar form adapted to fit purchase orders should be used to make changes in purchase orders.

When a change is actually ordered, a change order form (Fig. 7.2) may be employed. If there is any question at all regarding the subcontractor's willingness to accept the change, it would be desirable to send notice by registered or certified mail. The change order forms, when prepared and submitted, should be accompanied by a transmittal letter, stating exactly how and by whom the change order is to be signed and the date it is to be returned. A follow-up file should be kept, to make certain that all change orders are signed and returned.

When the contracts and the bond forms are correctly drawn, there



ECKS & WYE
General Contractors
DISPOSITION OF PENDING CHANGE ORDER

Contract No. . . . . .Date. . . . .
Job description. . . . .
. . . .

Please refer to our "Notice of Pending Change Order No. . . . .," dated. . . . ., issued in connection with the above-described job.

The proposed change has been:

☐ Abandoned
☐ Ordered in the form originally described
☐ Ordered in an amended form, see attached.

Will you please proceed as follows:

☐ Continue under present plans and specifications
☐ Proceed at once with change. Formal change order is being prepared
☐ Do not proceed with change pending issuance of formal change order.

Signed. . . . .

Fig. 7.6 Disposition of pending change order

should be no need for notice to the subcontractor's bonding company of any ordinary changes. Whether such notice is actually necessary is a decision that should be made by the contractor's attorney, and his written opinion on the point should be on file. If notice is necessary, it should be given by registered mail in a form approved by legal counsel. Failure to give notice when required could operate to discharge the surety.

Payments on change orders

Ordinarily, payment for work done under a change order will not be made until the change order is signed and returned by the contractor. It is usually the most businesslike procedure for the prime contractor to deal in the same way with subcontractors. When plans are available for prompt submission of change estimates and issuance of change orders, this procedure will create no undue hardship. However, unreasonable delay in issuing change orders coupled with the withholding of payment can cause trouble in several ways.

First, the job could be delayed because a contractor or subcontractor may justifiably refuse to proceed with work until he knows how much he is to be paid for doing it. Second, friction and dissension could (and usually does) arise on the job. Third, a liability for damages might result. Fourth, if a subcontractor is in financial difficulties it might make him insolvent, thus creating the problems and expenses that result from a subcontractor default.

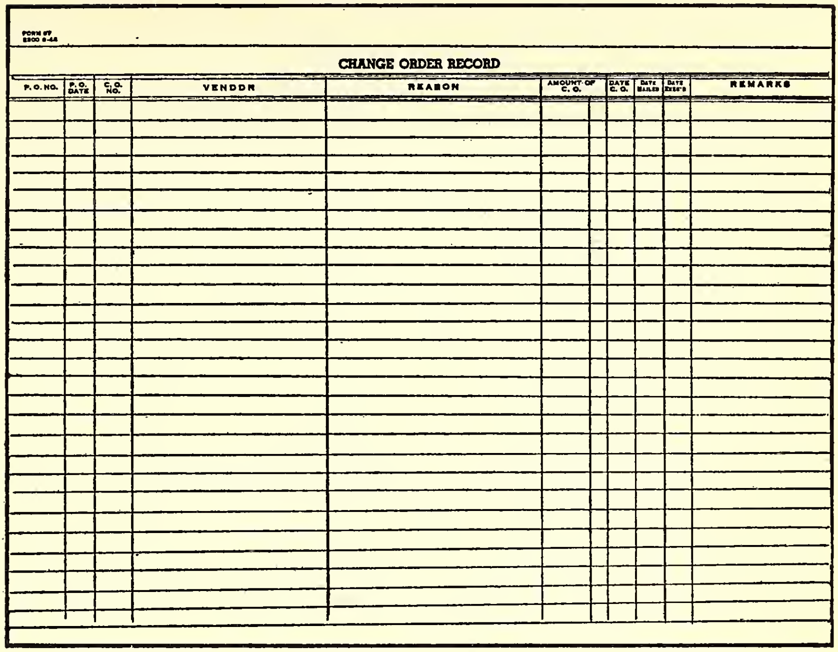
If the issuance of change orders is being unduly delayed it is a matter of concern to prime contractor and subcontractor alike, and there should be complete cooperation in locating and curing the causes of such delays. If they result from deliberate attempts to delay making payment, the party whose payments are being withheld should review his contract to see if he may not properly decline to start work on the change until change orders are issued.

If the contractor is required to start work before the changes are formally ordered, as frequently occurs with U.S. government contracts, the contractor should price his estimates so as to compensate him for the waiting time. Whether prime contractor or subcontractor, the more vigorously he demands compensation for waiting, the more contracting authorities will try to eliminate delay.

Often, the contracting authority (and here again the government is among the principal offenders) will deliberately refuse to issue a change order until the changed work is completed, and then will seek to negotiate the price so as to pay only for direct labor and direct material, and insist that no additional overhead has been incurred. If contracting authority follows such tactics as a matter of policy, the best practice is to try to provide a cushion for it in the bid. The next best procedure is to try to negotiate an acceptable formula for pricing change orders at the start of the job. With nongovernmental clients, it is usually possible and desirable to write the formula into the contract.

If the price of a change is to be negotiated after completion of the work, the only safe way to account for the costs is to set up a work order (Fig. 7.3) and to charge it with all costs incurred as if it were a separate work item. When this procedure is followed, extraordinary care must be taken to see that the work order is charged with all the costs. If arbitrary segregations cannot be avoided, it is better to err on the side of overcharging the work order than it is to undercharge it.

In selecting a base to which an overhead rate is to be applied, the best choice is usually "total direct cost." Many cost auditors and owner's representatives, mindful of the questions they will be called upon to answer, are more concerned with the size of the overhead rate than



CHANGE ORDER RECORD

P. O. NO.	P. O. DATE	C. O. NO.	VENDOR	REASON	AMOUNT OF C. O.	DATE C. O.	DATE MAILED	DATE REC'D	REMARKS

Fig. 7.7 Job change order control sheet

with the base to which it is applied. They are usually quite willing to see the contractor adequately reimbursed for his overhead costs, but they need a percentage rate that seems small so that it can be more easily justified. Total direct cost includes materials, equipment rentals, and subcontracts as well as direct labor; and from a strictly technical point of view it is probably the most accurate base against which to apply an over-all overhead rate. In addition, it has the advantage, when accounting for change order costs, of being the broadest base.

When there are numerous change orders, there is often a need to summarize them in one place and on a single schedule. A job change order control sheet (Fig. 7.7) is useful for this purpose. The manner in which the sheet is used is apparent from the column headings. Usually such a sheet is kept by the job engineer, or by the job office engineer on larger jobs.

In negotiating price adjustments for delays resulting from an excessive number of change orders, it is sometimes useful to have a set of plans marked with each point in the work that is affected by a change order.

8

Accounting for Labor

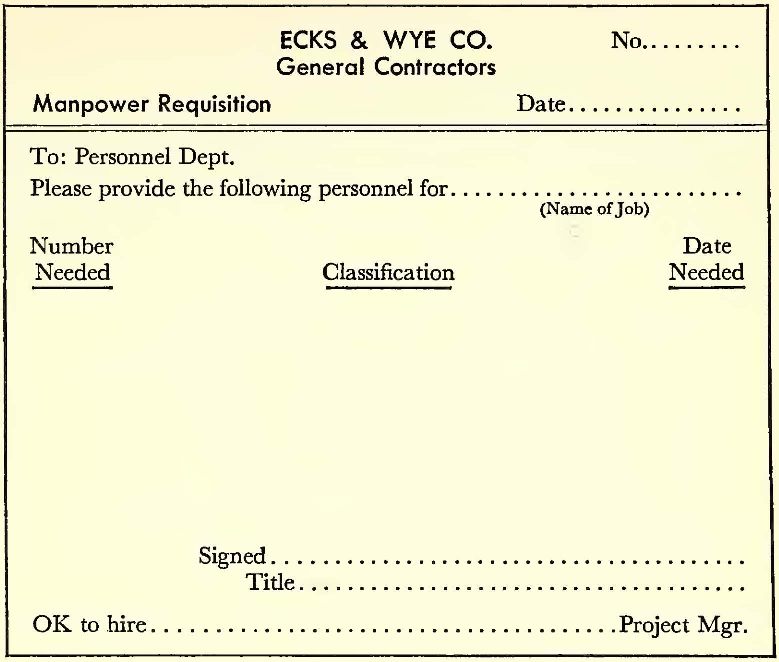
Basic hiring forms and procedures

Before an employee is hired, someone has to decide that his services are needed. Just how much paper work is required to start the new man working depends on such things as the size of the contractor's organization, the nature of the construction project, the nature of the particular job the man is to do, the requirements of the tax and labor laws, and the extent to which employment is subject to labor union rules and union contracts.

In a small organization there would be few formalities, and the contractor himself would probably do the hiring. In a very large operation the superintendent would issue a manpower requisition (Fig. 8.1) which would be initialed by the project manager and sent to the personnel department to authorize hiring the number and classification of men needed.

Regardless of the size of the organization, most of the people hired will come from substantially the same sources and will be recruited by one of the following methods:

1. Employment of foremen who bring their own crews
2. Calling men who have worked for the contractor before on other jobs or are otherwise known to the contractor



ECKS & WYE CO. No.........
General Contractors
Manpower Requisition Date...............

To: Personnel Dept.
Please provide the following personnel for........................
(Name of Job)

Number Needed	Classification	Date Needed

Signed....................................
Title...................................
OK to hire.................................Project Mgr.

Fig. 8.1 Manpower requisition

The original is sent from the project manager to the personnel department. The duplicate remains in the superintendent's book.

3. Calling applicants from applications in the files
4. Employing applicants who happen to come in at the time of hiring
5. Calling employment agencies
6. Calling the union hiring hall for unionized classifications
7. Advertising in newspapers and trade journals.

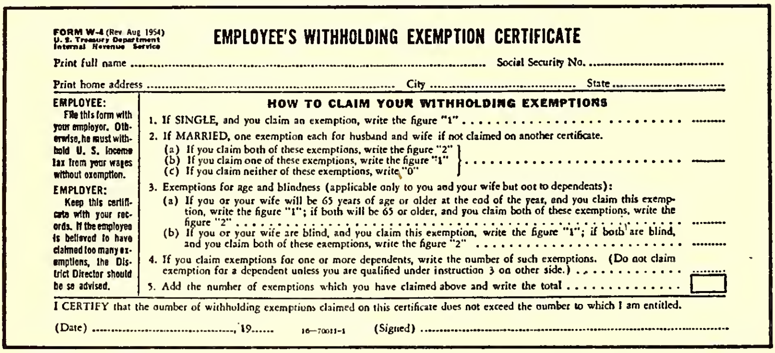
The information to be obtained from a new employee varies with the type of employee, the tax laws, and the needs of the employer. Schedule 8.1 presents a list of forms used in the hiring process. Some of them are required; some of them may or may not be required; and some of them are entirely optional.

Most small contractors limit their hiring procedures to entering an employee's name, address, social security number, and dependency credits on a W-4 form. But as the size and complexity of the contrac-

SCHEDULE 8.1/CHECKLIST OF HIRING FORMS

Always required

Form W–4—employee's withholding exemption certificate (Fig. 8.2). A combined Form W–4 and data card (Fig. 8.3) may be used. Note that the forms show name, home address, and social security number. Form W–4 is a U.S. Treasury Department form, but the data serve most state and local payroll tax purposes as well.



FORM W-4 (Rev Aug 1954)
U. S. Treasury Department
Internal Revenue Service

EMPLOYEE'S WITHHOLDING EXEMPTION CERTIFICATE

Print full name .... Social Security No. ....

Print home address .... City .... State ....

EMPLOYEE: File this form with your employer. Otherwise, he must withhold U. S. income tax from your wages without exemption.

EMPLOYER: Keep this certificate with your records. If the employee is believed to have claimed too many exemptions, the District Director should be so advised.

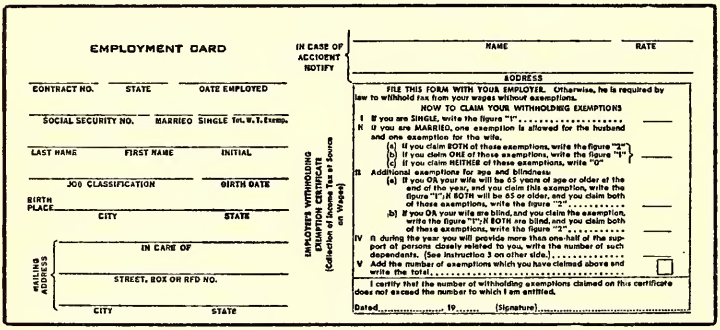
HOW TO CLAIM YOUR WITHHOLDING EXEMPTIONS

1. If SINGLE, and you claim an exemption, write the figure "1" ....
2. If MARRIED, one exemption each for husband and wife if not claimed on another certificate.
   (a) If you claim both of these exemptions, write the figure "2"
   (b) If you claim one of these exemptions, write the figure "1"
   (c) If you claim neither of these exemptions, write "0" .... ——
3. Exemptions for age and blindness (applicable only to you and your wife but not to dependents):
   (a) If you or your wife will be 65 years of age or older at the end of the year, and you claim this exemption, write the figure "1"; if both will be 65 or older, and you claim both of these exemptions, write the figure "2" ....
   (b) If you or your wife are blind, and you claim this exemption, write the figure "1"; if both are blind, and you claim both of these exemptions, write the figure "2" ....
4. If you claim exemptions for one or more dependents, write the number of such exemptions. (Do not claim exemption for a dependent unless you are qualified under instruction 3 on other side.) ....
5. Add the number of exemptions which you have claimed above and write the total .... ☐

I CERTIFY that the number of withholding exemptions claimed on this certificate does not exceed the number to which I am entitled.

(Date) ...., 19...... 16—70011-1 (Signed) ....

Fig. 8.2 Employee's withholding exemption certificate



EMPLOYMENT CARD

CONTRACT NO. STATE DATE EMPLOYED

SOCIAL SECURITY NO. MARRIED SINGLE Tot. W.T. Exemp.

LAST NAME FIRST NAME INITIAL

JOB CLASSIFICATION BIRTH DATE

BIRTH PLACE CITY STATE

MAILING ADDRESS
IN CARE OF
STREET, BOX OR RFD NO.
CITY STATE

IN CASE OF ACCIDENT NOTIFY
NAME RATE
ADDRESS

EMPLOYEE'S WITHHOLDING EXEMPTION CERTIFICATE (Collection of Income Tax at Source on Wages)

FILE THIS FORM WITH YOUR EMPLOYER. Otherwise, he is required by law to withhold tax from your wages without exemptions.

HOW TO CLAIM YOUR WITHHOLDING EXEMPTIONS

I If you are SINGLE, write the figure "1" .... ——
II If you are MARRIED, one exemption is allowed for the husband and one exemption for the wife.
   (a) If you claim BOTH of these exemptions, write the figure "2"
   (b) If you claim ONE of these exemptions, write the figure "1"
   (c) If you claim NEITHER of these exemptions, write "0" ——
III Additional exemptions for age and blindness:
   (a) If you OR your wife will be 65 years of age or older at the end of the year, and you claim this exemption, write the figure "1"; If BOTH will be 65 or older, and you claim both of these exemptions, write the figure "2" .... ——
   (b) If you OR your wife are blind, and you claim the exemption, write the figure "1"; If BOTH are blind, and you claim both of these exemptions, write the figure "2" .... ——
IV If during the year you will provide more than one-half of the support of persons closely related to you, write the number of such dependents. (See Instruction 3 on other side.) .... ——
V Add the number of exemptions which you have claimed above and write the total. .... ☐

I certify that the number of withholding exemptions claimed on this certificate does not exceed the number to which I am entitled.

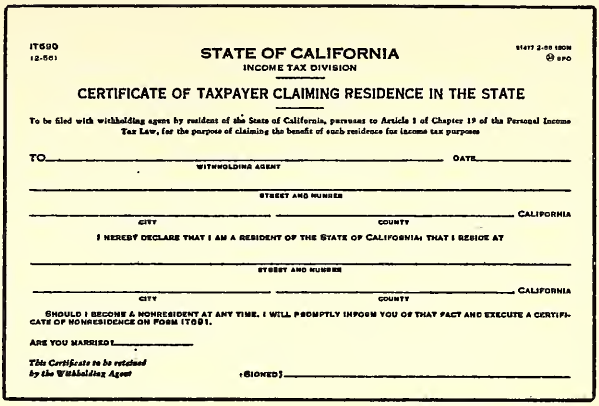
Dated..................... 19....... (Signature)...

Fig. 8.3 Combined Form W-4 and data card

May be required

Union "clearance slip" may or may not be required, depending on the union agreement. If it is required, the unions will usually have their own forms.

State withholding tax certificate may or may not be required, depending on the state. California requires such forms (Fig. 8.4, 8.5).



IT590
12-55

61417 2-55 150M ⊕ SPO

STATE OF CALIFORNIA
INCOME TAX DIVISION

CERTIFICATE OF TAXPAYER CLAIMING RESIDENCE IN THE STATE

To be filed with withholding agent by resident of the State of California, pursuant to Article 1 of Chapter 19 of the Personal Income Tax Law, for the purpose of claiming the benefit of such residence for income tax purposes

TO ______ DATE ______
WITHHOLDING AGENT

______
STREET AND NUMBER

______ ______ CALIFORNIA
CITY COUNTY

I HEREBY DECLARE THAT I AM A RESIDENT OF THE STATE OF CALIFORNIA; THAT I RESIDE AT

______
STREET AND NUMBER

______ ______ CALIFORNIA
CITY COUNTY

SHOULD I BECOME A NONRESIDENT AT ANY TIME, I WILL PROMPTLY INFORM YOU OF THAT FACT AND EXECUTE A CERTIFICATE OF NONRESIDENCE ON FORM IT591.

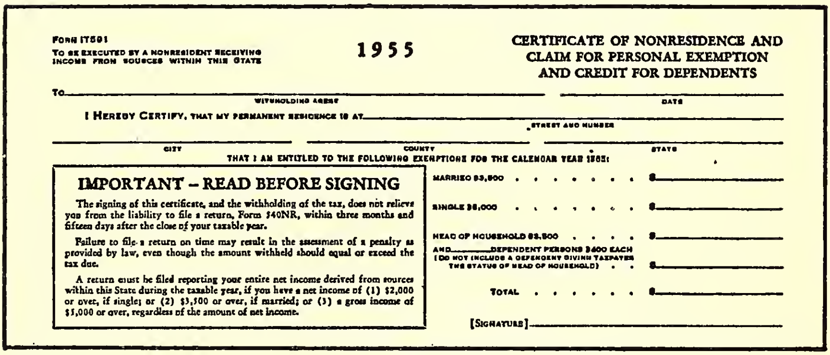
ARE YOU MARRIED? ______

This Certificate to be retained by the Withholding Agent

(SIGNED) ______

Fig. 8.4 California residence tax form

This form and that shown in Fig. 8.5 are withholding tax forms used by the state of California. Other states, and even some cities, have personal income taxes, which may be collected by withholding.



FORM IT591
TO BE EXECUTED BY A NONRESIDENT RECEIVING INCOME FROM SOURCES WITHIN THIS STATE

1955

CERTIFICATE OF NONRESIDENCE AND CLAIM FOR PERSONAL EXEMPTION AND CREDIT FOR DEPENDENTS

TO ______ ______
WITHHOLDING AGENT DATE

I HEREBY CERTIFY, THAT MY PERMANENT RESIDENCE IS AT ______
STREET AND NUMBER

______ ______ ______
CITY COUNTY STATE

THAT I AM ENTITLED TO THE FOLLOWING EXEMPTIONS FOR THE CALENDAR YEAR 1955:

IMPORTANT – READ BEFORE SIGNING

The signing of this certificate, and the withholding of the tax, does not relieve you from the liability to file a return, Form 540NR, within three months and fifteen days after the close of your taxable year.

Failure to file a return on time may result in the assessment of a penalty as provided by law, even though the amount withheld should equal or exceed the tax due.

A return must be filed reporting your entire net income derived from sources within this State during the taxable year, if you have a net income of (1) $2,000 or over, if single; or (2) $3,500 or over, if married; or (3) a gross income of $5,000 or over, regardless of the amount of net income.

MARRIED $3,500 . . . . $______
SINGLE $1,500 . . . . $______
HEAD OF HOUSEHOLD $3,500 . . . . $______
AND ______ DEPENDENT PERSONS $400 EACH (DO NOT INCLUDE A DEPENDENT GIVING TAXPAYER THE STATUS OF HEAD OF HOUSEHOLD) . . $______
TOTAL . . . . . . $______

[SIGNATURE] ______

Fig. 8.5. California nonresidence tax form

SCHEDULE 8.1/CHECKLIST OF HIRING FORMS (Cont.)

Optional

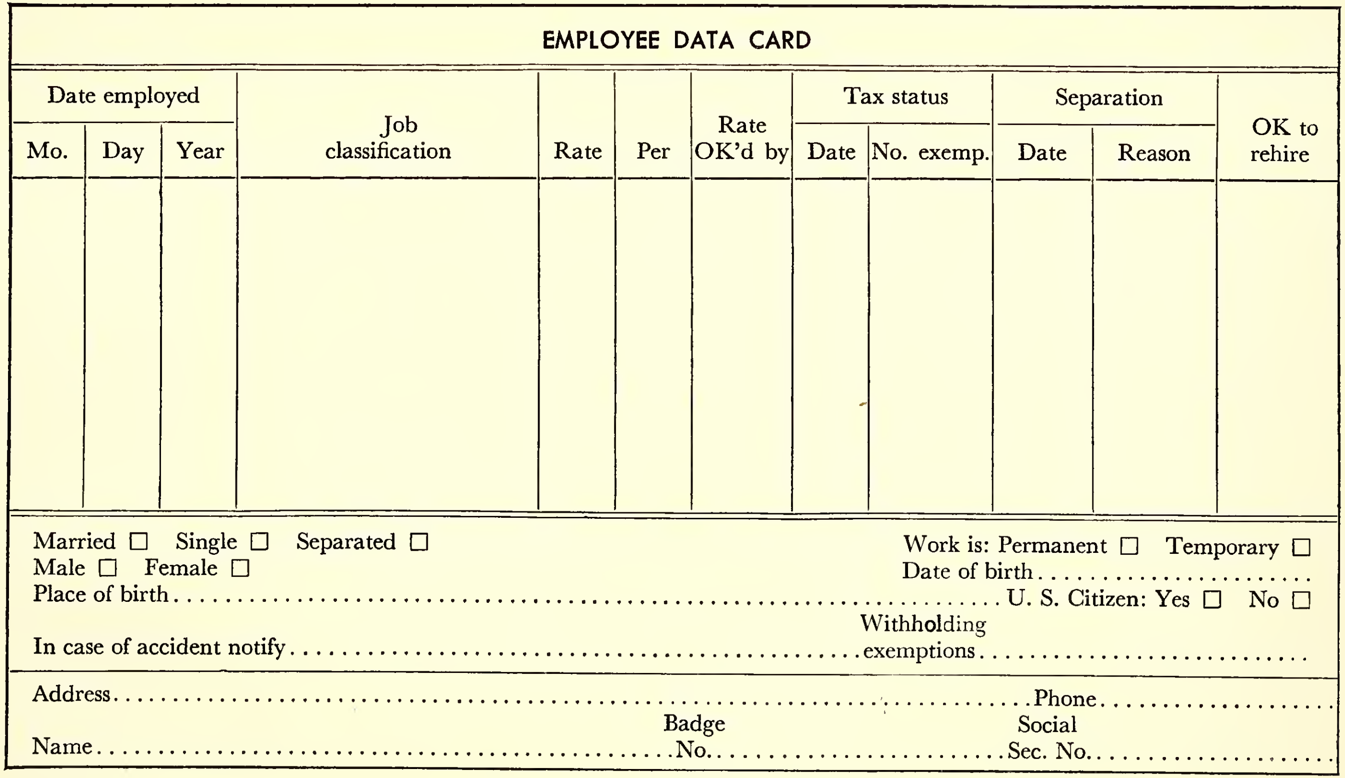
Combined form W–4 and data card (Fig. 8.3)

Separate employee data card (Fig. 8.6)

Combined employee data card and employee earnings record (Fig. 8.7)

Application blank, used almost exclusively for executive and office employees (Fig. 8.8)

Equipment issue receipts (Fig. 8.9) are used when the contractor provides



EMPLOYEE DATA CARD

Date employed			Job classification	Rate	Per	Rate OK'd by	Tax status		Separation		OK to rehire
Mo.	Day	Year					Date	No. exemp.	Date	Reason	

Married ☐ Single ☐ Separated ☐

Male ☐ Female ☐

Place of birth. . . . . U. S. Citizen: Yes ☐ No ☐

In case of accident notify. . . . . Withholding exemptions. . . . .

Work is: Permanent ☐ Temporary ☐

Date of birth. . . . .

Address. . . . . Phone. . . . .

Name. . . . . Badge No. . . . . Social Sec. No. . . . .

Fig. 8.6 Employee's data card (separate)

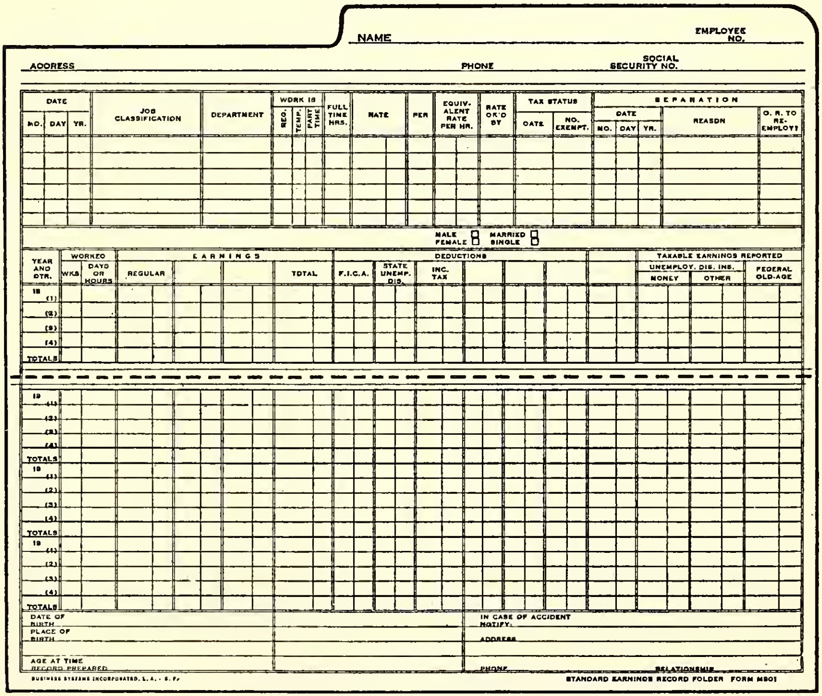
SCHEDULE 8.1/CHECKLIST OF HIRING FORMS (Cont.)

such items as hard hats, safety shoes, raincoats, boots, blankets, mattresses, pillows, sheets, tools of the trade, and so on. Such a receipt in the man's file may be used to support a deduction upon his separation.

Camp and mess hall clearance slip (Fig. 8.10) serves as a receipt when blankets, mattresses, bedding, and so on are turned in on termination, and when any mess hall charges are paid. If a camp and mess hall are maintained, this slip would have to be presented before the final check is issued.

Assignment slip for new employees (Fig. 8.11)

Payroll change notice (Fig. 8.12)



NAME EMPLOYEE NO.

ADDRESS PHONE SOCIAL SECURITY NO.

DATE			JOB CLASSIFICATION	DEPARTMENT	WORK IS			FULL TIME HRS.	RATE	PER	EQUIVALENT RATE PER HR.	RATE OK'D BY	TAX STATUS		SEPARATION				
															DATE				
MO.	DAY	YR.			REG.	TEMP.	PART TIME						DATE	NO. EXEMPT.	MO.	DAY	YR.	REASON	O. R. TO RE-EMPLOY?

MALE ☐ FEMALE ☐ MARRIED ☐ SINGLE ☐

YEAR AND QTR.	WORKED		EARNINGS				DEDUCTIONS							TAXABLE EARNINGS REPORTED		
														UNEMPLOY. DIS. INS.		
	WKS	DAYS OR HOURS	REGULAR			TOTAL	F.I.C.A.	STATE UNEMP. DIS.	INC. TAX					MONEY	OTHER	FEDERAL OLD-AGE
19 (1)																
(2)																
(3)																
(4)																
TOTALS																
19 (1)																
(2)																
(3)																
(4)																
TOTALS																
19 (1)																
(2)																
(3)																
(4)																
TOTALS																
19 (1)																
(2)																
(3)																
(4)																
TOTALS																

DATE OF BIRTH

PLACE OF BIRTH

AGE AT TIME RECORD PREPARED

IN CASE OF ACCIDENT NOTIFY:

ADDRESS

PHONE RELATIONSHIP

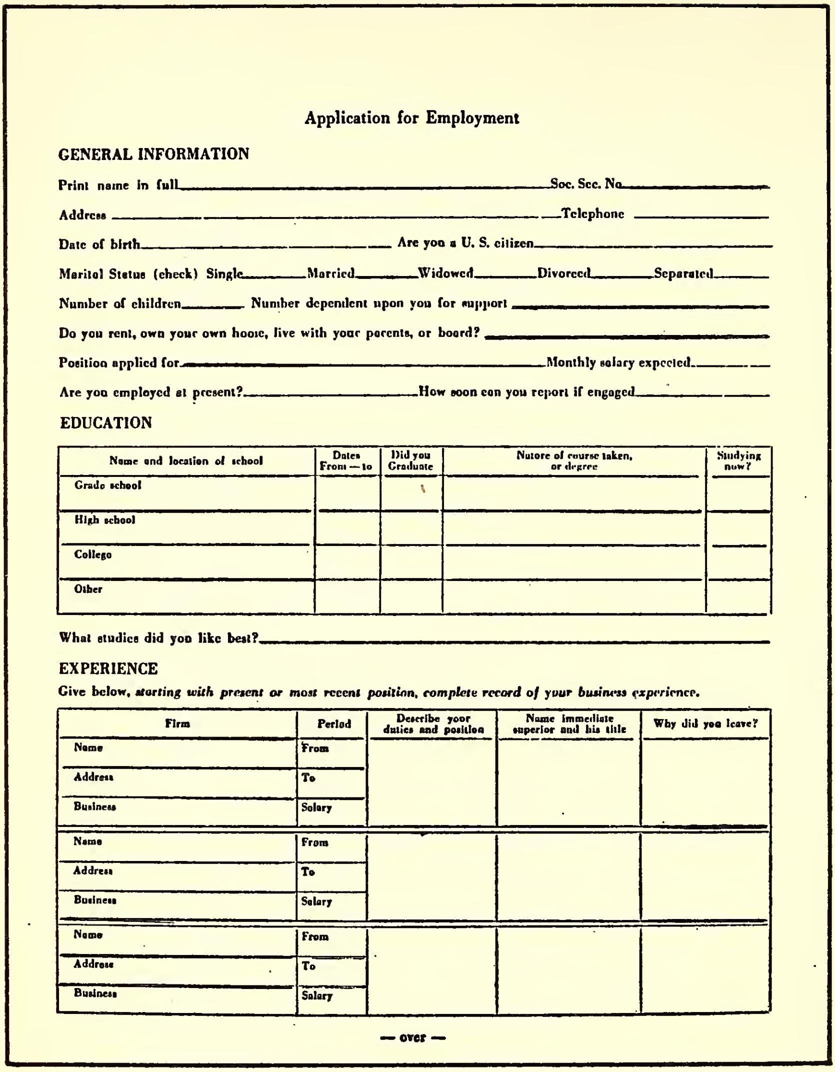
BUSINESS SYSTEMS INCORPORATED, L. A. - S. F.

STANDARD EARNINGS RECORD FOLDER FORM M801

Fig. 8.7 Combined employee's data card and earnings record

necessary for [illegible] xial [illegible]

This form is used as a file folder for copies of the payroll checks as well as a data card and earnings record.



Application for Employment

GENERAL INFORMATION

Print name in full ______________________ Soc. Sec. No. ____________

Address ______________________ Telephone ____________

Date of birth ______________________ Are you a U. S. citizen ____________

Marital Status (check) Single ______ Married ______ Widowed ______ Divorced ______ Separated ______

Number of children ______ Number dependent upon you for support ____________

Do you rent, own your own home, live with your parents, or board? ____________

Position applied for ______________________ Monthly salary expected ____________

Are you employed at present? ____________ How soon can you report if engaged ____________

EDUCATION

Name and location of school	Dates From — to	Did you Graduate	Nature of course taken, or degree	Studying now?
Grade school				
High school				
College				
Other				

What studies did you like best? ______________________

EXPERIENCE

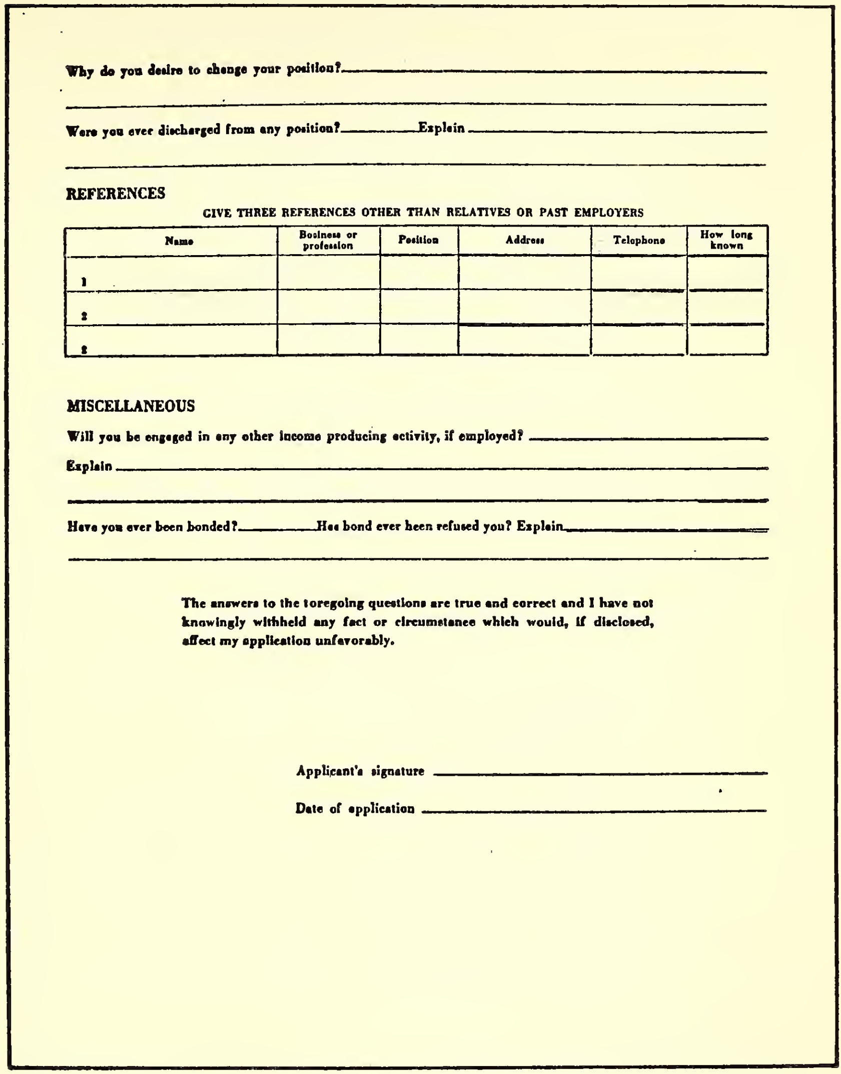
Give below, *starting with present or most recent position, complete record of your business experience.*

Firm	Period	Describe your duties and position	Name immediate superior and his title	Why did you leave?
Name	From			
Address	To			
Business	Salary			
Name	From			
Address	To			
Business	Salary			
Name	From			
Address	To			
Business	Salary			

— over —

Fig. 8.8a Application blank—Face

tor's organization increase, so do the formalities involved in hiring. Sometimes the kind of contract determines the amount of paper work. For example, on U.S. government cost-plus-fixed-fee contracts, a manpower requisition would normally be required, together with applications (or signed data cards) for each employee, and, as a rule, evidence



Why do you desire to change your position?

Were you ever discharged from any position? Explain

REFERENCES

GIVE THREE REFERENCES OTHER THAN RELATIVES OR PAST EMPLOYERS

	Name	Business or profession	Position	Address	Telephone	How long known
1						
2						
3						

MISCELLANEOUS

Will you be engaged in any other income producing activity, if employed?

Explain

Have you ever been bonded? Has bond ever been refused you? Explain

The answers to the foregoing questions are true and correct and I have not knowingly withheld any fact or circumstance which would, if disclosed, affect my application unfavorably.

Applicant's signature

Date of application

Fig. 8.8b Application blank—Reverse

of each employee's citizenship. An order signed by someone in authority would have to be issued instructing the paymaster to place the man on the payroll. On some jobs, photographing, fingerprinting, and security clearances are also required. Of course, any property issues would be covered by receipts.

BEDDING RECEIPT

Badge No.................
Wool blankets .... Cotton blankets ....
Pillows .... Pillow slips ....
Sheets .... Mattress ....
I received the above items on: ....

Payroll deductions for meals and lodging are hereby authorized. ....
(Signed)

Fig. 8.9a Equipment issue receipt—Face

Name Check-in date Badge No.
Home address

Contractor

Occupation

Barracks No. Room No. Bed No.

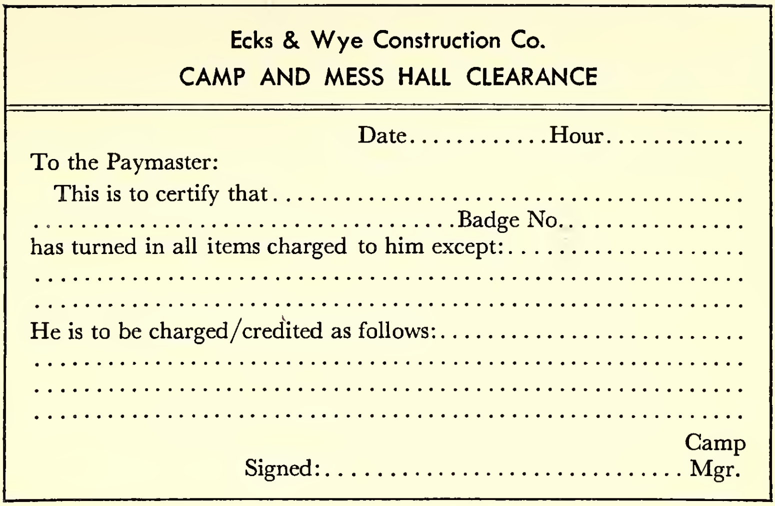
Check-out date

Fig. 8.9b Equipment issue receipt—Reverse

The test for hiring procedures is the same as for any other. Unless a procedure contributes more than its cost to the final profit, it is not justified. Usually the formalities observed at the hiring stage serve to comply with the law or with contractual requirements, and to prevent losses. If, under any given circumstances, a procedure does not serve either function, its justification may be seriously questioned.

Timekeeping procedures

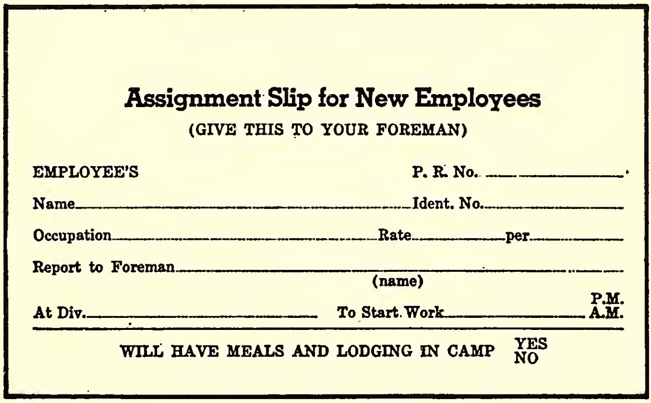
Timekeeping serves two functions. First, it determines the total amount of time for which the employees are to be paid, and if the work is done at more than one rate, the amount of time to be paid at each. Second, it determines which work items (cost accounts) are to be charged for the work done. The smaller and simpler the operation, the less chance that any employee will be absent for any substantial period of time without that fact coming to the contractor's attention.



Ecks & Wye Construction Co.
CAMP AND MESS HALL CLEARANCE

Date............Hour............
To the Paymaster:
This is to certify that..
.................................Badge No................
has turned in all items charged to him except:...................
....
....
He is to be charged/credited as follows:........................
....
....
....
Camp
Signed:............................ Mgr.

Fig. 8.10 Camp and mess hall clearance slip



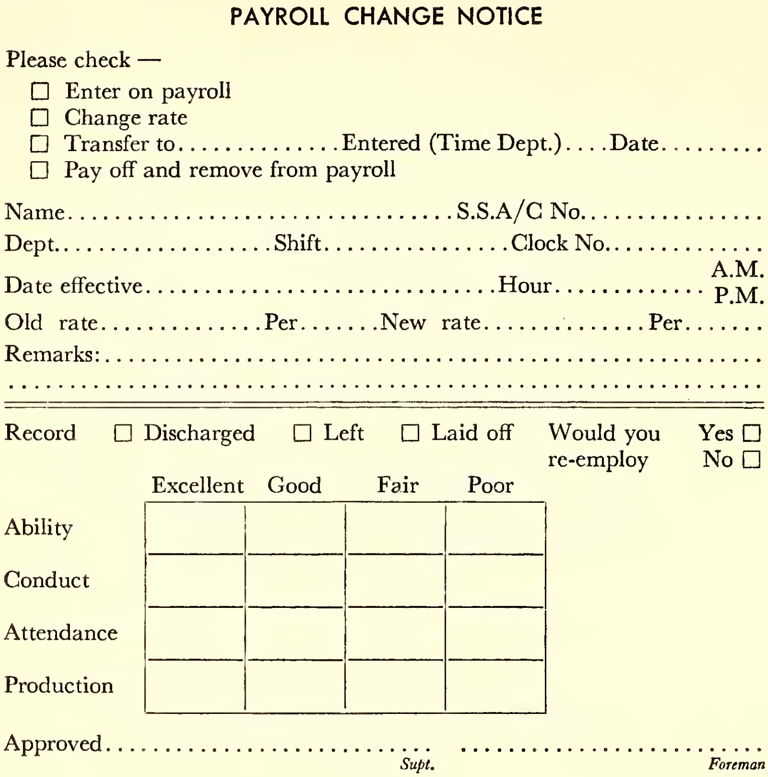
Assignment Slip for New Employees
(GIVE THIS TO YOUR FOREMAN)

EMPLOYEE'S P. R. No.________
Name____________________Ident. No.________
Occupation____________________Rate________per________
Report to Foreman____________________
(name)
At Div.____________ To Start Work____________ P.M. A.M.

WILL HAVE MEALS AND LODGING IN CAMP YES NO

Fig. 8.11 Assignment slip for new employees

The simplest of all time records is the foreman's time book. These books usually have about 50 pages (Fig. 8.13). They have a heavy tagboard cover so that they can be carried in the foreman's pocket without getting too badly crumpled. The form is self-explanatory. However, when the only time record kept is the one in the foreman's book, paychecks must be prepared directly from it, and that means that the foreman must either prepare the checks himself or be with-



PAYROLL CHANGE NOTICE

Please check —
- ☐ Enter on payroll
- ☐ Change rate
- ☐ Transfer to..............Entered (Time Dept.)....Date.........
- ☐ Pay off and remove from payroll

Name..............................S.S.A/C No...............

Dept..................Shift...............Clock No.............

Date effective............................Hour............. A.M. P.M.

Old rate..............Per.......New rate..............Per.......

Remarks:...

....

Record ☐ Discharged ☐ Left ☐ Laid off Would you re-employ Yes ☐ No ☐

	Excellent	Good	Fair	Poor
Ability				
Conduct				
Attendance				
Production				

Approved......................... ....
Supt. Foreman

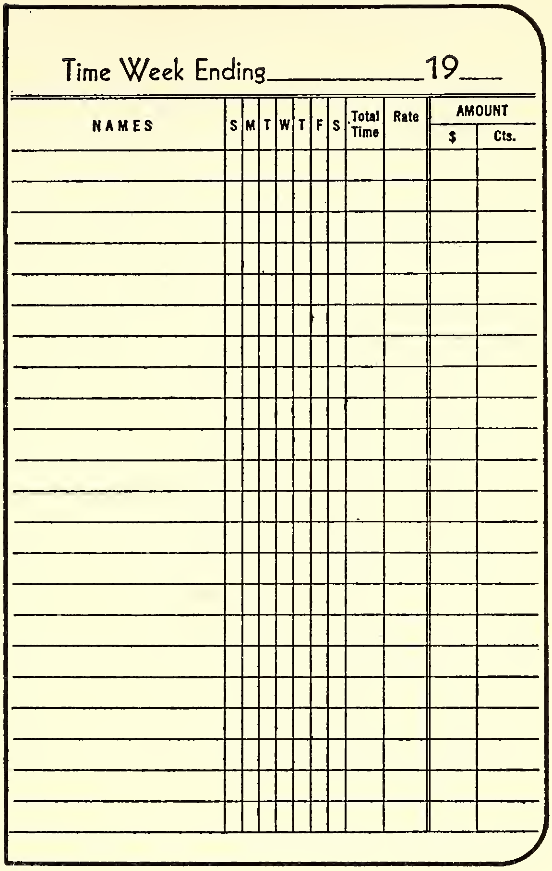
Fig. 8.12 Payroll change notice

This form is used to hire a new employee; to change his assignment or rate after he is employed; or as a termination.

out his book for a while. If a time book it lost, the only record of the men's time is also lost. This loss might be costly at the time of a compensation insurance or payroll tax audit.

For these reasons it is quite common for the information in the foreman's time book to be copied on time sheets or time cards. Attempts to make a carbon copy of the foreman's time book have not been very successful, because a foreman usually carries the book in his pocket. The copies resulting from such attempts are often illegible and badly smeared. One alternative is to copy the data from the time book on a weekly time sheet (Fig. 8.14). Sometimes this work is done by the foreman, sometimes by a timekeeper, payroll clerk, or bookkeeper.

If weekly time sheets are used, they are usually prepared by the



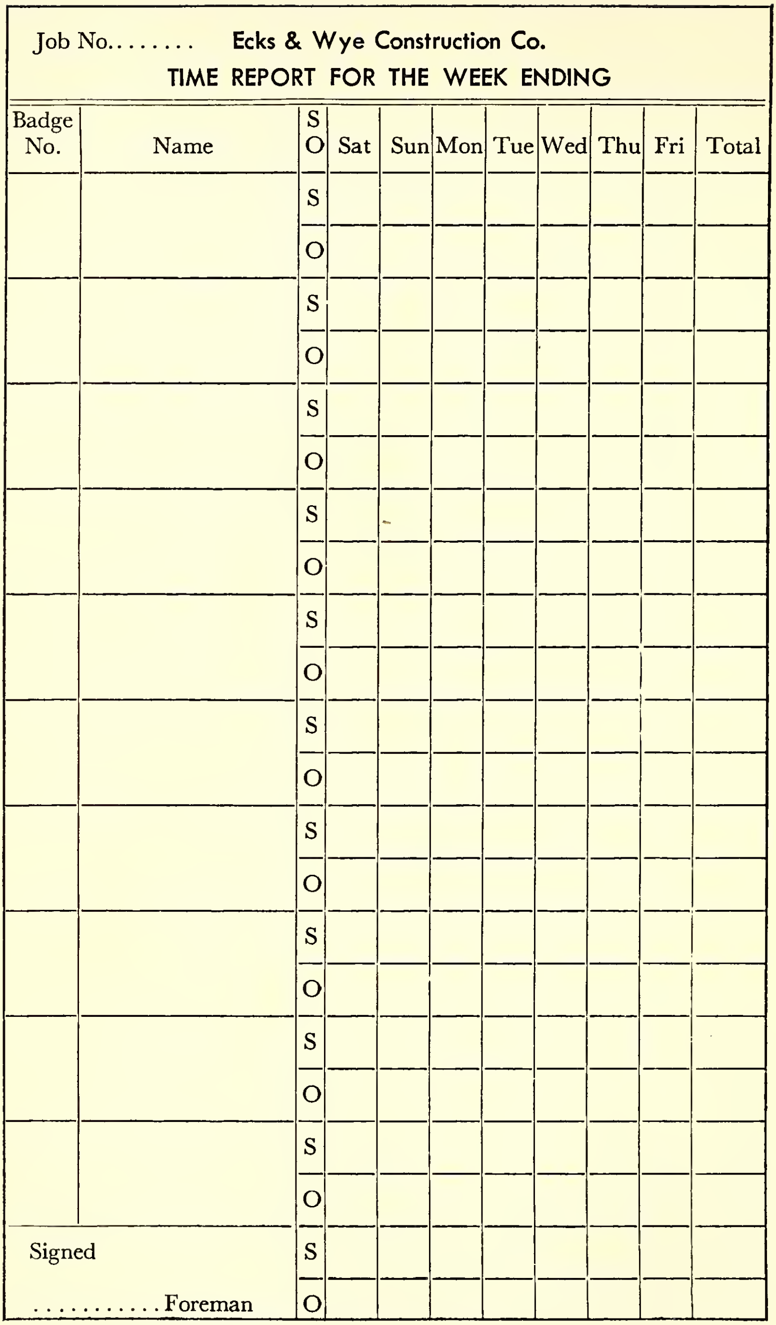
Time Week Ending____________19___

NAMES	S	M	T	W	T	F	S	Total Time	Rate	AMOUNT	
										$	Cts.

Fig. 8.13 A sheet from a foreman's time book

foreman. This procedure, however, permits collusion between the foreman and one or more of his men. If the crew is small enough so that the contractor would normally find out about unauthorized absences, no further check is needed. However, when the crew is too large, or when, for some other reason, the contractor would not know of absences that did not appear on the time records, then occasional surprise visits by a timekeeper should be made, and the time sheets should be inspected, when they are turned in, for any absences noted on the surprise visit.

Sometimes weekly time sheets are prepared by the timekeeper, who enters the time daily for each man and summarizes it for the weekly payroll. Cost distributions are made on the same sheet.



Job No........ **Ecks & Wye Construction Co.**

TIME REPORT FOR THE WEEK ENDING

Badge No.	Name	S O	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Total
		S								
		O								
		S								
		O								
		S								
		O								
		S								
		O								
		S								
		O								
		S								
		O								
		S								
		O								
		S								
		O								
		S								
		O								
		S								
		O								
Signed		S								
...........Foreman		O								

Fig. 8.14 Weekly time report

This form is designed for a payroll week ending Friday evening. A man who works on more than one job during the week gets a separate paycheck for each.

The principal disadvantages of weekly time sheets are:

1. Labor cost figures are not available daily.

2. Errors may be as much as eight or nine days old before they are noticed; and usually the older they are the harder they are to correct.

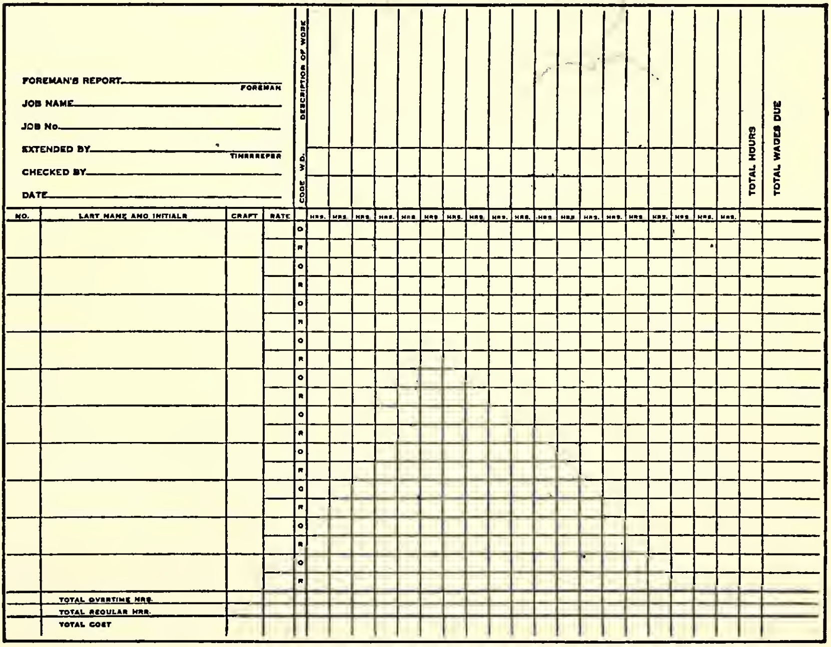
3. If a foreman carries a time sheet around for a week it gets messy and illegible, and is a source of errors in pay records.

4. On a construction job, there may be a considerable turnover of personnel, and a weekly time sheet is not very flexible.

5. If a dishonest foreman wants to insert fraudulent names on the payroll or to carry a man laid off in the middle of the week for an extra day or two, the chances of detection are somewhat poorer with a weekly time sheet than with other forms.

To overcome the disadvantages of the weekly time report, daily time sheets (Fig. 8.15) or daily time cards (Fig. 8.16–8.18) are frequently used.

The use of either time sheets or time cards is based on the assump-



FOREMAN'S REPORT ______ FOREMAN
JOB NAME ______
JOB No. ______
EXTENDED BY ______ TIMEKEEPER
CHECKED BY ______
DATE ______

DESCRIPTION OF WORK
CODE W.D.
TOTAL HOURS
TOTAL WAGES DUE

NO. | LAST NAME AND INITIALS | CRAFT | RATE | HRS. | HRS. | HRS. | HRS. | HRS. | HRS. | HRS. | HRS. | HRS. | HRS. | HRS. | HRS. | HRS. | HRS. | HRS. | HRS. | HRS. | HRS. | HRS.

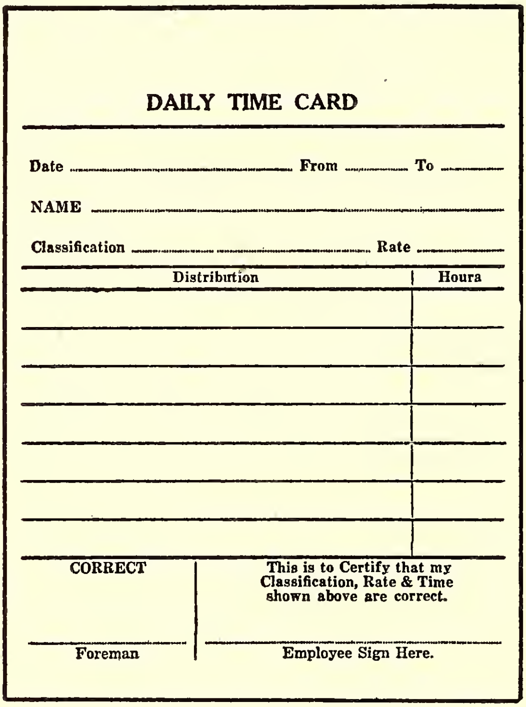
O
R
O
R
O
R
O
R
O
R
O
R
O
R
O
R
O
R
O
R

TOTAL OVERTIME HRS.
TOTAL REGULAR HRS.
TOTAL COST

Fig. 8.15 Daily time report

This form is prepared by the foreman and completed in the payroll department.

tion that someone (usually the foreman or the timekeeper) is going to be responsible for seeing to it that the men are docked for the time lost if they are late to work in the morning or if they leave the job before quitting time at night. In a factory, this function is performed by time clocks. However, on construction jobs, time clocks have never proved to be very satisfactory, and they are rarely used. When a check-in and check-out system is required, the so-called "brass" system is probably the most common.



DAILY TIME CARD

Date .... From .... To ....

NAME ....

Classification .... Rate ....

Distribution	Hours

CORRECT

....
Foreman

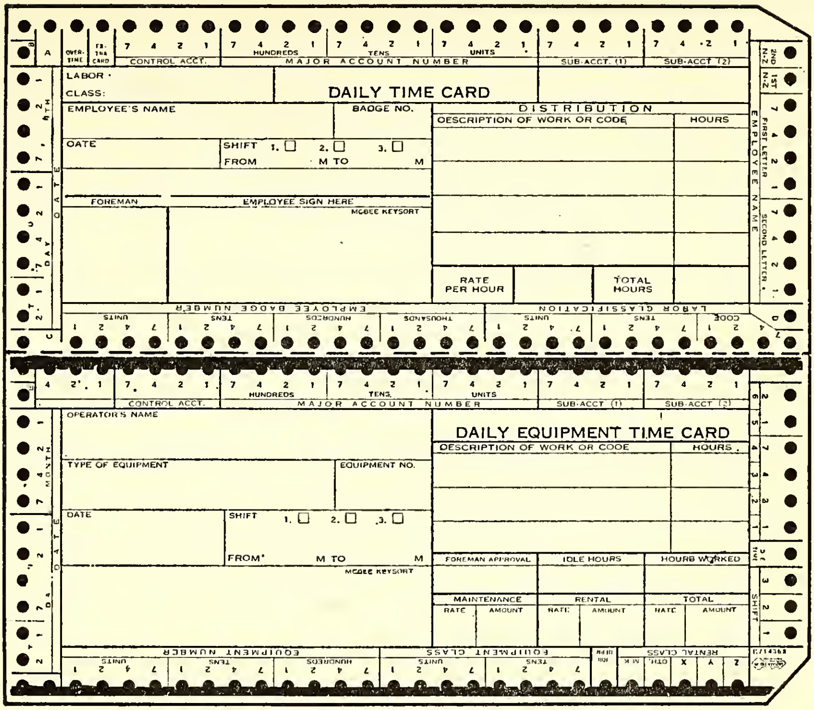
This is to Certify that my Classification, Rate & Time shown above are correct.

....
Employee Sign Here.

Fig. 8.16 Daily time card

This simple card is suitable for almost any kind of job except one that is so large that mechanical sorting would be required because of the number of employees involved.

In concept and operation the brass system is simple. Each workman is assigned a payroll number or badge number. Sometimes these numbers are grouped by crafts, and sometimes they are simply issued in the order of employment. On a board at the timekeeper's window


OVER-TIME
EXTRA CARD
CONTROL ACCT.
HUNDREDS
TENS
UNITS
MAJOR ACCOUNT NUMBER
SUB-ACCT. (1)
SUB-ACCT (2)
LABOR CLASS:
DAILY TIME CARD
EMPLOYEE'S NAME
BADGE NO.
DISTRIBUTION
DESCRIPTION OF WORK OR CODE
HOURS
DATE
SHIFT 1. ☐ 2. ☐ 3. ☐
FROM M TO M
FOREMAN
EMPLOYEE SIGN HERE
MCBEE KEYSORT
RATE PER HOUR
TOTAL HOURS
EMPLOYEE BADGE NUMBER
LABOR CLASSIFICATION
UNITS
TENS
HUNDREDS
THOUSANDS
CODE
EMPLOYEE NAME
FIRST LETTER
SECOND LETTER
MONTH
DATE
DAY

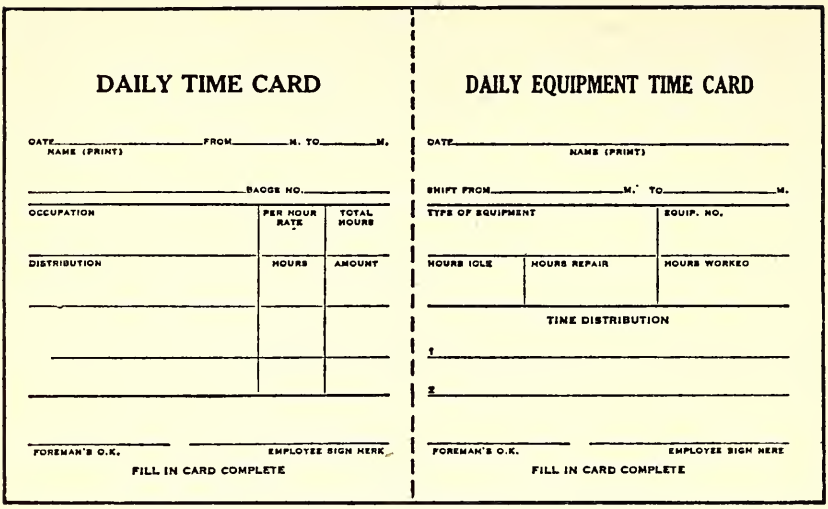
DAILY EQUIPMENT TIME CARD
OPERATOR'S NAME
DESCRIPTION OF WORK OR CODE
HOURS
TYPE OF EQUIPMENT
EQUIPMENT NO.
DATE
SHIFT 1. ☐ 2. ☐ 3. ☐
FROM M TO M
MCBEE KEYSORT
FOREMAN APPROVAL
IDLE HOURS
HOURS WORKED
MAINTENANCE
RATE
AMOUNT
RENTAL
RATE
AMOUNT
TOTAL
RATE
AMOUNT
EQUIPMENT NUMBER
EQUIPMENT CLASS
RENTAL CLASS
SHIFT

Fig. 8.17 Keysort labor and equipment time card

This card is used in large operations where mechanical sorting is required. The daily time card may be used independently.

are a number of metallic (brass) disks, each bearing a number corresponding to the employee's badge number. As men report for work they show their badge and are handed their brass. Brasses still on the board when work starts indicate that the men to whom the corresponding badges have been issued are either late or absent. As latecomers arrive, the time the brass is picked up is recorded on the time record for that day.

When the men leave the job, their brass is turned in and put back on the board. If a man turns in his brass early, the time is noted and recorded on the time record. If he fails to turn in his brass at night, it is necessary to find out why. He may have just forgotten; he may have gone to lunch and not returned; or he may have left the job before quitting time. During the day it is not uncommon to use the brass as a tool check, so that failure to return tools would



DAILY TIME CARD

DATE________ FROM_____ M. TO_____ M.
NAME (PRINT)

________ BADGE NO._____

OCCUPATION	PER HOUR RATE	TOTAL HOURS
DISTRIBUTION	HOURS	AMOUNT

FOREMAN'S O.K. EMPLOYEE SIGN HERE

FILL IN CARD COMPLETE

DAILY EQUIPMENT TIME CARD

DATE________
NAME (PRINT)

SHIFT FROM_____ M. TO_____ M.

TYPE OF EQUIPMENT		EQUIP. NO.
HOURS IDLE	HOURS REPAIR	HOURS WORKED

TIME DISTRIBUTION

1 ________

2 ________

FOREMAN'S O.K. EMPLOYEE SIGN HERE

FILL IN CARD COMPLETE

Fig. 8.18 Daily time card

This form is used by equipment operators and has an equipment time card attached.

leave the man without a brass to turn in at night, and would call attention to his failure to return his tools.

One of the most important disadvantages of the brass system is the fact that it automatically introduces "portal-to-portal" pay. If the work area is a long way from the time office, this system can cause the loss of a good many man-hours each day, and thousands of dollars on a large job. It is common to find this system in use on U.S. government cost-plus-fixed-fee jobs for which paper accountability is more important than actual economy.

In some of the smallest construction firms there is no timekeeping procedure as such. At the end of the week the men turn in weekly cards or sheets showing the hours worked and the names or addresses of the jobs on which they worked during the week; the paychecks are made from the time records turned in by each man. On some very large jobs where the work area is close enough so that the portal-to-portal problem is not serious, it is quite possible to use time clocks satisfactorily. However, because time clocks have traditionally not been much used in the construction industry, attempts to use them are sometimes met by strong union opposition. Even when they are acceptable to the men, time clocks do not, as a rule, prove very practical in making the cost accounting segregations required for construction jobs.

Special timekeeping problems

If work is scattered over a wide area, it is often necessary to set up "area" time shacks, where an area timekeeper or the area foreman or superintendent makes his headquarters. If time on remote crews is kept by the foreman or an area timekeeper, surprise face-checks should be made at frequent but irregular intervals, and occasionally someone from the paymaster's department should distribute the paychecks.

The same problems arise when work is in an isolated area. Lack of direct supervision is common under such conditions, and sometimes employees believe that no one will know if they are absent. Such absenteeism can become an important item of increased cost. If the superintendent will arrange to make frequent visits at irregular intervals to check work progress at a remote job site or work area, such visits will also discourage unauthorized absences. If unit costs for labor are running too high it usually indicates a need for more and better supervision, and this observation is just as true when the overrun is caused by misconduct as it is when the overrun is caused by inefficiency and faulty planning.

Another special timekeeping problem is created when men are employed at shifting rates. There are three different situations under which such problems may arise:

1. A whole crew does work which varies in classification from hour to hour within the day. It is customary for the crew to be paid for the whole day at the rate for the highest classification in which the men worked that day.

2. One or more men on a crew will be employed on work requiring a higher rate of pay than usual. For example, a laborer may use a jackhammer for all or part of the day and become entitled to an "air tool operator" rate for that day.

3. One or more men in a higher classification may work with a labor crew for one day and thus increase the rate which the crew foreman is entitled to receive for that day. For example, union rules in some areas require that a crew foreman must receive a wage differential above the highest paid man on his crew. If, under such rules, a labor foreman during all or part of one day had a pipefitter on his crew, his rate for that day would go up to the point where it exceeded the pipefitter's rate by the required differential.

When shifting rates are possible, there are several things to be watched for. First, there is the possibility of collusion between a superintendent and a foreman to increase the pay of the foreman.

Second, particularly when foremen report the time, there may be similar collusion between the foreman and individual workmen. Of course an excess of work outside of classification may be due to faulty planning; no amount of timekeeping effort can remedy such a defect. However, when certain crews seem to be doing a disproportionate amount of work outside of their regular classification, a change in supervisory personnel may be indicated. Sometimes a mere request for an explanation will stop the irregularities. The same comments apply to excessive transfers of men between crews.

If higher rates to certain individuals for the use of special tools appear on the payroll too often, it may be worthwhile to find out if the tool shack records show that such tools were actually charged out to those individuals on the days in question. It might also be in order to find out the kind of work the crew was doing to see if any work with special tools was required. For example, grounds for investigation would exist if a jackhammer operator showed up on a crew that was doing hand excavation in an area of soft or filled earth.

Any possibility of shifting rates calls for extreme care in timekeeping, and all persons responsible for timekeeping and payroll should know the rules thoroughly. Naturally, if things are not as they should be, it is necessary to find and correct the trouble. However, regardless of other circumstances, it is of paramount importance that the payroll checks be correct. There are very few timekeeping or payroll situations so vulnerable to misinterpretation as a failure to compute time at the correct rate. Anything more than an occasional error of this kind is damaging to job morale and is an open invitation to professional trouble makers.

Another special timekeeping problem is that created by rapid turnover of help. On very small jobs, and in very small firms, the payroll is so small that there is usually no problem. On larger jobs it is important that, when a new employee is placed on the payroll, the person responsible for the timekeeping be notified of that fact immediately. If the foreman keeps the time, this procedure is automatic. If timekeepers are used, there should be some prompt and completely dependable way for the timekeeper to learn of new additions to the payroll so that time can be correctly recorded. One method is to give the timekeeper a copy of all assignment slips (Fig. 8.11). Another is to have all new employees report to the timekeeper to receive their assignment slips.

It is equally important that, whenever a man is laid off, his time up to the moment of termination be in the hands of the paymaster. For this purpose, time must be recorded daily through the last shift of the preceding day. Then when the man is laid off, there need only be added the time for the current day.

There are several ways of summarizing time data coming in from the job. One of the easiest and simplest is to record it on a payroll form. However, a much more efficient way is to record it on a combination payroll work sheet and earnings record (Fig. 8.19). This sheet serves as the basis for making up the paychecks and also as the employee's earnings record.

A construction company's work volume varies widely. A man who works as a foreman or superintendent when there is plenty of work may work with his tools when there is little work. To provide for such a situation, it is important that the man's personnel file show authorizations for the changes, and the dates when they are effective. Various forms (Fig. 8.12) are useful for this purpose, regardless of the size of the contractor's operation. As a matter of fact, a small contractor may have more need for this type of record than a large operator whose volume of work tends to remain steady.

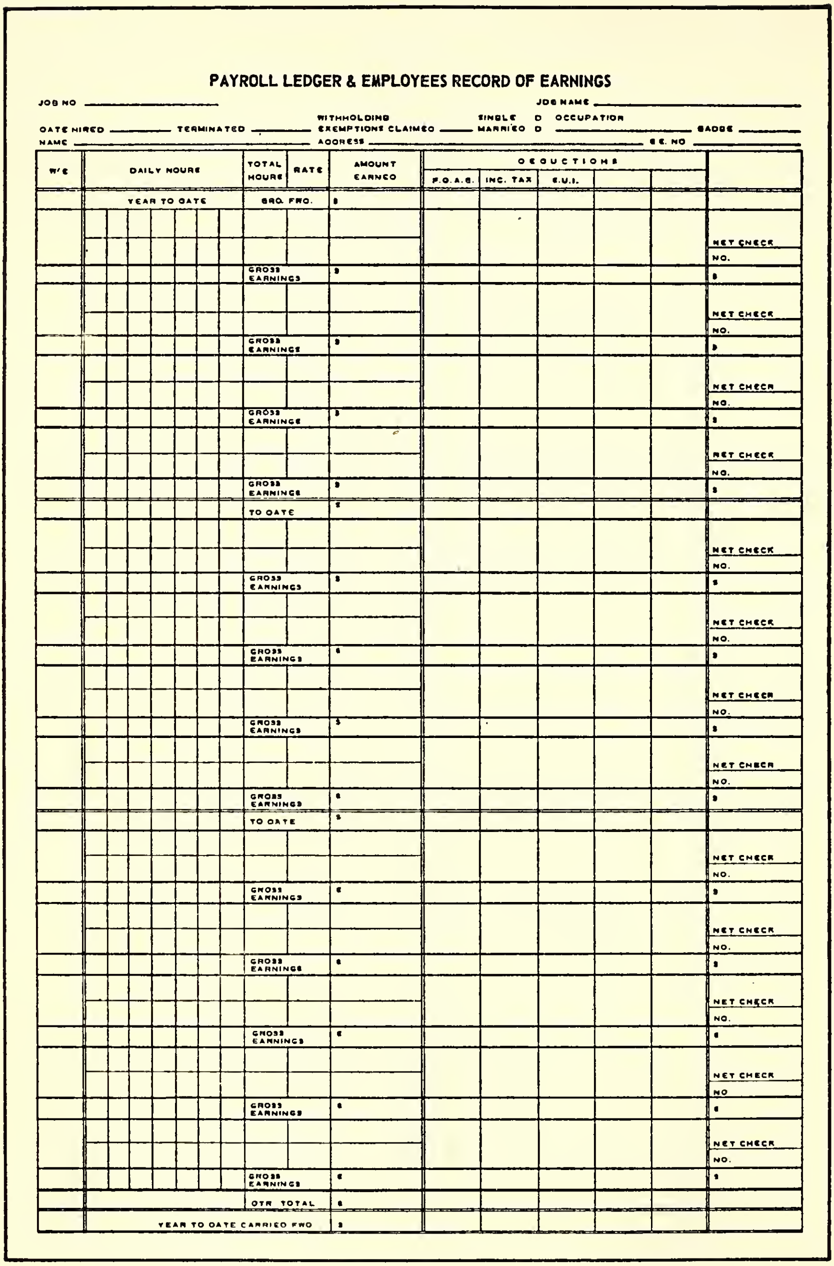
One of the standard timekeeping techniques is known as "face-checking." Theoretically, a timekeeper should know "by sight" all the men on the crews for which he keeps time, and he should go out on the job and actually see them at work at least once, and preferably two or three times each day. Actually, this procedure is rarely followed in detail. On small jobs it is unnecessary. On large jobs, when the turnover is rapid, it may be impossible. One variation, similar to the brass system already mentioned, is the "badge number check," in which the timekeeper goes out on the job and checks off the badge numbers of the men he can account for on the job. On many cost-plus-fixed-fee jobs, when the time control is very tight, a time control record (Fig. 8.20) is used. Spaces are provided for noting the man's presence in the morning, the afternoon, and at quitting time. The badge number at the left is circled for any man who failed to "brass in" in the morning.

Actually, such a form is well adapted to making spot checks on crews in the field when the actual timekeeping is done by the foremen. Unassigned badge numbers would be struck out by the payroll department on the basis of payrolls. Finding those badge numbers in use in the field, or failure to locate a man with a listed badge number would call for investigation.

Timekeeping routine

Basically the routine work of timekeeping involves these steps:

1. An up-to-date list of employees is maintained in the payroll



PAYROLL LEDGER & EMPLOYEES RECORD OF EARNINGS

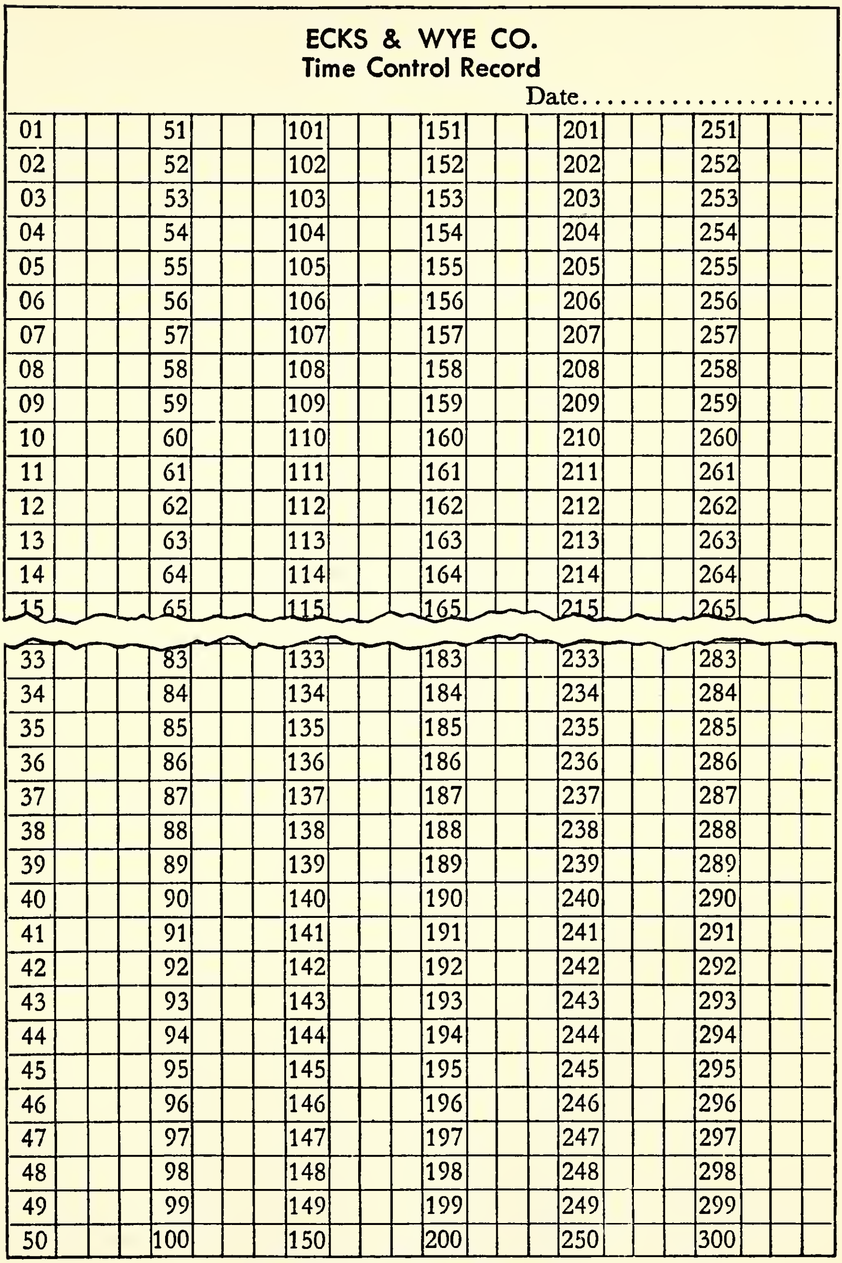
JOB NO ____________ JOB NAME ____________

DATE HIRED ______ TERMINATED ______ WITHHOLDING EXEMPTIONS CLAIMED ______ SINGLE ☐ MARRIED ☐ OCCUPATION ____________ BADGE ______

NAME ____________ ADDRESS ____________ S.S. NO ______

W/E	DAILY HOURS	TOTAL HOURS	RATE	AMOUNT EARNED	DEDUCTIONS					
					F.O.A.B.	INC. TAX	S.U.I.			
	YEAR TO DATE	BRO. FWD.		$						
										NET CHECK NO.
		GROSS EARNINGS		$						$
										NET CHECK NO.
		GROSS EARNINGS		$						$
										NET CHECK NO.
		GROSS EARNINGS		$						$
										NET CHECK NO.
		GROSS EARNINGS		$						$
		TO DATE		$						
										NET CHECK NO.
		GROSS EARNINGS		$						$
										NET CHECK NO.
		GROSS EARNINGS		$						$
										NET CHECK NO.
		GROSS EARNINGS		$						$
										NET CHECK NO.
		GROSS EARNINGS		$						$
		TO DATE		$						
										NET CHECK NO.
		GROSS EARNINGS		$						$
										NET CHECK NO.
		GROSS EARNINGS		$						$
										NET CHECK NO.
		GROSS EARNINGS		$						$
										NET CHECK NO
		GROSS EARNINGS		$						$
										NET CHECK NO.
		GROSS EARNINGS		$						$
		QTR TOTAL		$						
	YEAR TO DATE CARRIED FWD			$						

Fig. 8.19 Combination payroll work sheet and employee's earnings record



ECKS & WYE CO.
Time Control Record

Date....................

01				51				101				151				201				251			
02				52				102				152				202				252			
03				53				103				153				203				253			
04				54				104				154				204				254			
05				55				105				155				205				255			
06				56				106				156				206				256			
07				57				107				157				207				257			
08				58				108				158				208				258			
09				59				109				159				209				259			
10				60				110				160				210				260			
11				61				111				161				211				261			
12				62				112				162				212				262			
13				63				113				163				213				263			
14				64				114				164				214				264			
15				65				115				165				215				265			
33				83				133				183				233				283			
34				84				134				184				234				284			
35				85				135				185				235				285			
36				86				136				186				236				286			
37				87				137				187				237				287			
38				88				138				188				238				288			
39				89				139				189				239				289			
40				90				140				190				240				290			
41				91				141				191				241				291			
42				92				142				192				242				292			
43				93				143				193				243				293			
44				94				144				194				244				294			
45				95				145				195				245				295			
46				96				146				196				246				296			
47				97				147				197				247				297			
48				98				148				198				248				298			
49				99				149				199				249				299			
50				100				150				200				250				300			

Fig. 8.20 Time control record

This form is used by field timekeepers checking badge numbers on the job.

department. In a very small business payroll might be only one of a number of functions performed by the company bookkeeper. In a very large business, or even on a large job, payroll might be the responsibility of a number of payroll clerks working under a paymaster. Regardless of size, it is a payroll function to maintain the list of individuals currently employed and, where necessary, classify them according to the job they do and the supervisor or foreman under whom they work.

2. Either the foreman or a timekeeper makes a record of the number of hours worked each day by each man. The record may, in very small operations, be turned in once each week. In larger operations it is essential that it be turned in daily, so that layoffs can be handled promptly, and so that all differences can be resolved every day as they arise, instead of accumulating for a week and delaying the preparation of the payroll.

3. The daily (or weekly) time record is turned in by the person who keeps it (usually either the foreman or a timekeeper) to the person who makes the weekly payroll (either the paymaster or the bookkeeper).

4. The paymaster (or bookkeeper) examines the time record for errors. On large jobs any discrepancies are noted on a "trouble sheet" and are sent to the field by a timekeeper to be reconciled. Typical of the kinds of errors which occur regularly are the following:

a. The time for one or more crews is missing.
b. A man or a crew shows working time less than that usually turned in.
c. A man does not appear on the payroll who does appear on time record, or vice versa.
d. A man or a crew shows working overtime under circumstances where no overtime should be worked, or overtime as recorded appears excessive.
e. No time, or an obviously wrong time, is reported for a man known to be working.
f. Time of a man or a crew is reported as chargeable to a work item in which no work is being done, or which is being done by another crew.
g. Time is shifted from work items on which costs are running over the estimate to work items on which there is a gain.

Alert checking of time data coming in from the field can catch and correct errors which might otherwise be incorporated into the cost records. Of course, if good cost records are kept, substantial errors in timekeeping can distort unit costs, and in this way may be discovered by the accounting department. Nevertheless, errors on the payroll, if they are discovered at all, are often not discovered until the employee complains.

It is necessary that all time data be reviewed, immediately upon being brought in from the field, by someone who knows, at least in general, the parts of the job where work is being done, which crews should be doing it, what operations must coincide with what others, and approximately how much time should be going into each operation. On some jobs the project manager or superintendent will insist on personally coding the time cards. On larger jobs the coding may be done by the project engineer, the office engineer, or, if such an employee is available, a cost engineer.

Timekeeping cost data

The most variable of all construction costs is labor. Hence control of labor cost is one of the most important functions of job management, and labor costs are the most closely watched of all construction costs. It is not uncommon among the more progressive construction firms to find project managers requiring a daily labor cost report (Fig. 8.21). This form requires the use of the so-called "effective pro-

DAILY LABOR COST REPORT

Job:............................Date:..........................

Work Item	Unit	YESTERDAY				JOB TO DATE			
		Units Compl.	Man Hrs.	Total Cost	Unit Cost	Units Compl.	Man Hrs.	Total Cost	Unit Cost

Time checked & priced by......	Pricing checked, extensions made by...............	Cost coded, unit priced by..................

Fig. 8.21 Daily labor cost report

duction" or "equivalent units" methods of calculating the various units completed in any one day. As a practical matter, at the end of any day but the last, there will be work units in various stages of completion. The work units in various stages of completion are stated in terms of a comparable number of completed units.

When such a report is required, it usually must be in the hands of the project manager or superintendent shortly after work starts early the next day.

Following is a typical routine set up for a job with about 400 men: A timekeeper familiar with the crews and the work done started checking and pricing the preceding day's time reports about 5 A.M. By 5:30 A.M. there were enough reports priced and checked to permit someone in the paymaster's department to start checking the wage rates and making the extensions. By 6 A.M. the cost engineer started: coding the cards to show the work items to be charged; summarizing the costs by work items; and scanning the reports for extension errors. As soon as the cost engineer finished with the sheets for any individual crew, he turned them back to the payroll department where they were totaled by crews; and a grand total of labor cost for the day was taken. When the cost engineer had finished his work sheet, which summarized the costs for the day, the totals by crews and the grand total had to balance (within a reasonable amount) with the total labor costs distributed.

Experience with this routine has indicated that on payrolls up to 700 or 800 men, a daily labor cost report can be available by 10 A.M. of the following day.

Only the larger jobs have a timekeeping department separate from the payroll department, and even some of these do not have a separate cost engineer. Therefore, on medium-sized and small jobs the functions described above must be performed by fewer people. Even if the job is relatively small, and the entire operation is performed by one person, there is often a need for daily labor costs. Daily labor cost figures are no longer worth what it costs to compile them only when the job is small enough for the contractor himself, or the superintendent or foreman who is running the job, to determine and control labor costs by direct personal observation on the job without the aid of statistical reports and the computation of unit costs. Even then, a weekly cost statement can be extremely useful in helping the man in charge to check his own observations.

It seems trite to say that the usefulness of cost figures is limited by their accuracy. It is equally trite to observe that if costs are largely based (as they admittedly are) on human judgment, they can be no better than the on-the-spot judgment of a thoroughly qualified construction man. On the other hand, even an experienced construction man can only be in one place at a time, and, if work is going on in a number of places, the previous day's labor figures can tell him at a glance the places where his knowledge and experience can be used to the best advantage on that particular day. If he has an opportunity to see all the work every day, as in smaller operations, a weekly labor cost report helps to check his thinking and to guard against human error.

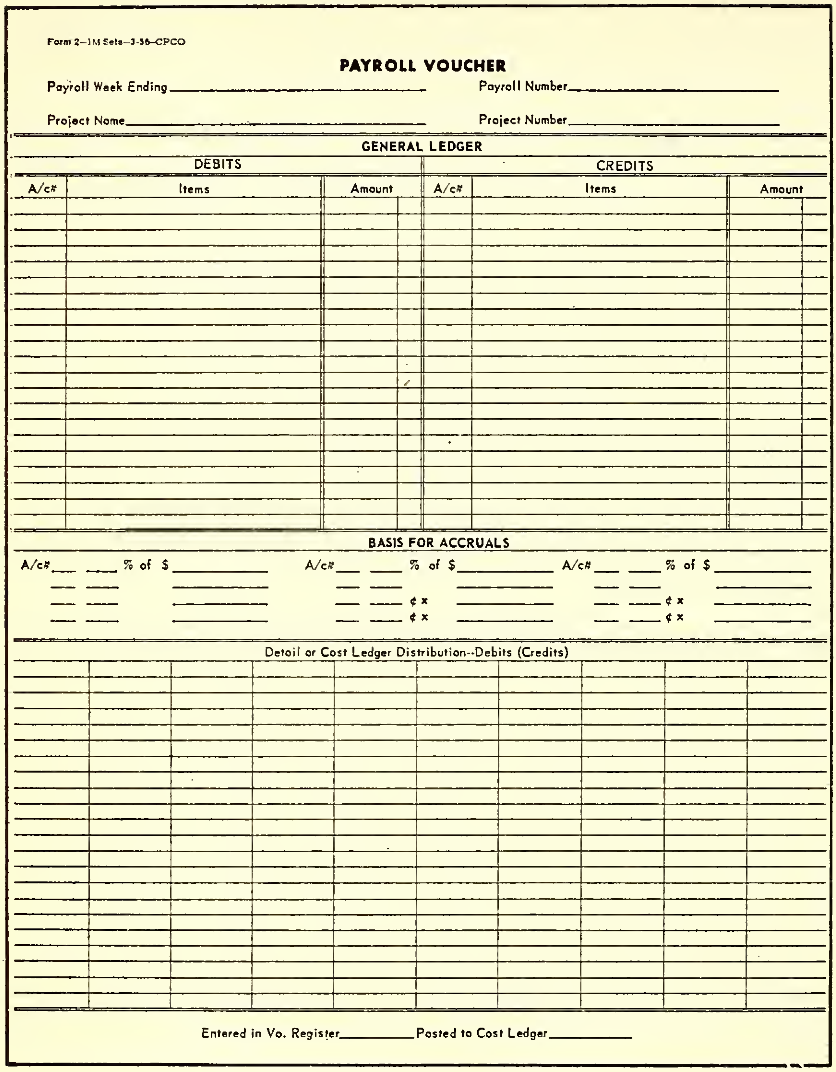
To summarize, the steps in preparing the daily labor cost report are as follows:

1. The time reports are assembled and checked.
2. They are priced and extended.
3. The extensions are coded to the appropriate work items.
4. The total costs thus distributed are compared with the total earnings of all employees for that day to provide an over-all check on the cost distribution. Fractional cents and even minor distribution errors usually prevent an exact balance, and as a practical matter these small differences are usually absorbed in an overhead item without any distortion.

There remain several important practical questions. First, should the labor figures on the daily cost report include payroll taxes, insurance premiums, and the cost of various "fringe benefits" based on payrolls? Second, if such costs are included in the labor figures how should they be distributed? Third, will the labor figures so compiled be entered in the records or are they memoranda only? Fourth, if they are to enter the records, what records do they reach, how do they get there, and when? Fifth, how are adjustments and corrections handled?

1. Whether payroll taxes, insurance premiums, and fringe benefits should be included in the cost of labor or treated separately depends on the policy of the company. If these items were included with labor at the time the job was bid, it is better that they be treated in the same way in the job cost report, so that actual unit costs may be comparable with the estimate. If they were not included directly in labor costs, they should be included in an overhead account which is distributed either on the basis of labor cost or labor hours. From a practical standpoint, this treatment is usually acceptable when all overhead is distributed on the basis of total direct cost.

2. The problem of how to distribute costs such as those just discussed when they are to be included in the labor costs, is solved by spreading them equally over the total labor figure, so that each dollar of labor bears the same burden. To attempt an exact segrega-



Form 2—1M Sets—3-56—CPCO

PAYROLL VOUCHER

Payroll Week Ending ____________________ Payroll Number ____________________

Project Name ____________________ Project Number ____________________

GENERAL LEDGER

DEBITS			CREDITS		
A/c#	Items	Amount	A/c#	Items	Amount

BASIS FOR ACCRUALS

A/c# ___ ___ % of $ ______ A/c# ___ ___ % of $ ______ A/c# ___ ___ % of $ ______

___ ___ ______ ___ ___ ______ ___ ___ ______

___ ___ ______ ___ ___ ¢ x ______ ___ ___ ¢ x ______

___ ___ ______ ___ ___ ¢ x ______ ___ ___ ¢ x ______

Detail or Cost Ledger Distribution--Debits (Credits)

Entered in Vo. Register ______ Posted to Cost Ledger ______

Fig. 8.22 Payroll voucher

To avoid unnecessary writing or typing on regular vouchers, many firms use specially printed vouchers to record the check that is issued to reimburse the payroll bank account.

tion would not only entail unnecessary accounting costs, but would result in figures that are not comparable.

3. The question of treating the labor cost figures as memoranda or as record entries is ordinarily answered by having only one analysis of these figures by work items. If the daily labor cost reports are prepared correctly, it is a simple matter to combine them for the week and to let the totals for the week serve as the analysis for the weekly payroll.

4. There is usually no need for a separate entry to be made in the records for each individual paycheck other than to show the check number on the payroll. One generally accepted method of getting the cost figures into the books is through the voucher prepared to reimburse the payroll bank account. Usually a payroll voucher (Fig. 8.22) is prepared to support the check issued to transfer the funds to cover the paychecks from the general account to the payroll account. This method brings the labor cost into the general and cost ledgers in a reasonable way—through the voucher register. In very small concerns with no separate payroll bank account, few jobs, and cost segregated only by jobs, the entry would be made directly through the check register (Fig. 8.23).

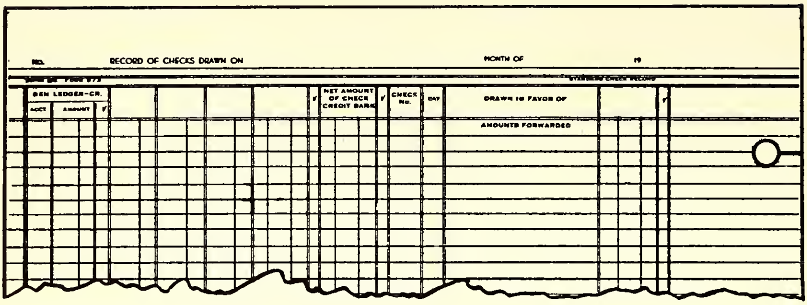
Adjustments of the daily reports can usually be made on the report of the following day without serious distortion. On those unusual occasions when there is distortion, an explanation accompanying the adjustment would be required.

Some of the more progressive contractors, whose cost records are increasingly being used in the preparation of bid estimates, are experimenting with keeping labor costs in terms of man-hours as well as money, so that variations due to rate changes may be eliminated.

Timekeeping and paychecks

The importance of job morale, and the contribution that prompt, accurate paychecks can make to it, has already been noted. The point cannot be overemphasized. However, there are even more immediate and compelling considerations. Often state laws, union rules, or both, assess penalties against employers for late payments, dishonored checks, or underpayments. Union hiring halls are slow to supply men to contractors whose reputation is bad, and even among the men themselves the news travels fast. Therefore, it is most important that the paychecks are prompt and correct.

If the time keeping data have been brought in from the field and checked, extended, and incorporated into the daily cost report, any


No. RECORD OF CHECKS DRAWN ON MONTH OF 19

GEN LEDGER–CR.

ACCT AMOUNT ✓

✓ NET AMOUNT OF CHECK CREDIT BANK ✓ CHECK No. DAY DRAWN IN FAVOR OF ✓

AMOUNTS FORWARDED

Fig. 8.23 Small contractor's

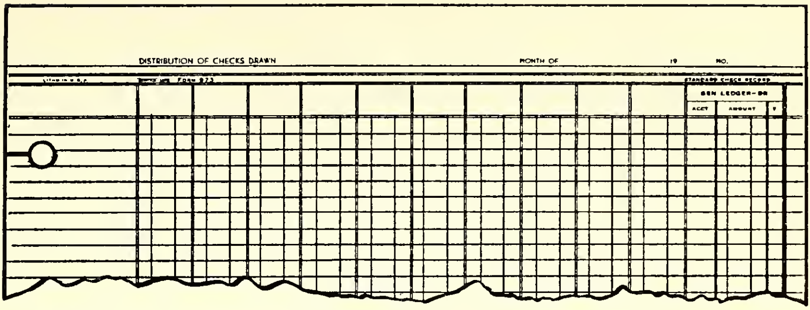
This form is suitable for payroll entries. If a separate bank account is used for payrolls, "payroll account" would appear in the "drawn in favor of" column.

major errors will usually have been discovered and corrected. Nevertheless, before the time cards are entered in the daily time accumulation, someone should be able to answer "yes" to all of these questions·

1. Have we accounted for every person on the payroll?
2. Do we know that the base rates are correct?
3. Is anyone working at a special rate?
4. If so, is it correctly shown on the time card?
5. Have we checked all cards to see that apparent absences, time off, and overtime are explained?
6. Are any unexplained differences being investigated?

Again, if a daily cost report is made, there will be an over-all check figure in dollars and possibly also in man-hours. If a daily cost report is not made, it is sometimes worthwhile to compute the gross earnings of each crew in dollars to obtain a check figure. It takes comparatively little time and often catches serious and embarrassing errors. For example, if time sheets are being used and there is a 10-man crew working 8 hours at $2.475 per hour with one foreman at $2.65 per hour the sheet would total 88 man-hours and $219.20 (80 hours at $2.475 equals $198.00, plus 8 hours at $2.65 or $21.20). After a few days the paymaster can look at the sheet and tell at a glance the proper amount to be extended, while the variations from the normal catch his eye and call for closer scrutiny. At the same time the total for each crew can be recorded on an adding machine tape to provide a quick checklist on which trouble can be quickly localized, by crews, if the total does not equal the gross pay on the payroll.

It is often said that tests like the one just described are all right



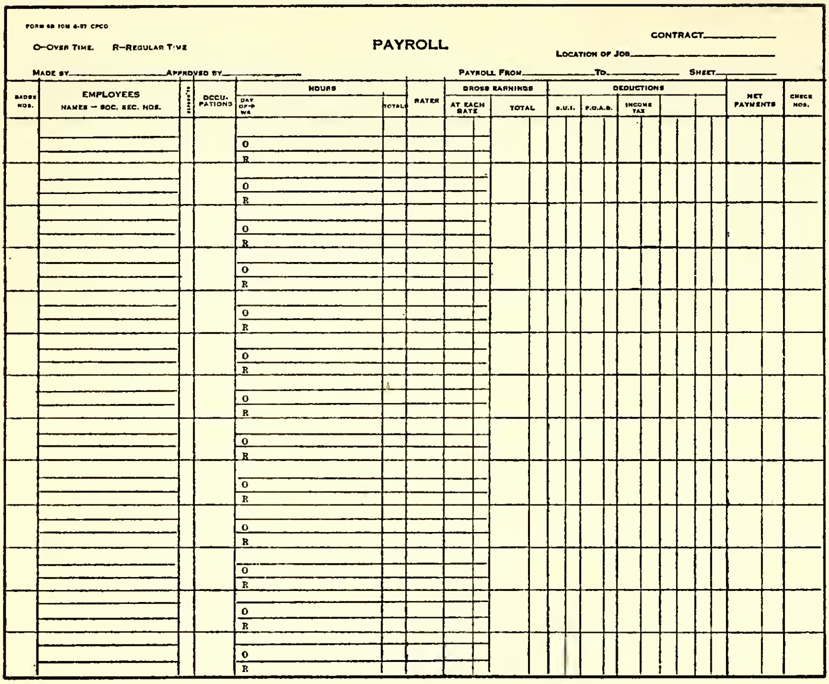
check register

for the big payrolls but cost more than they are worth on the small ones. This criticism is simply not justified. Any experienced payroll clerk can make the test in a matter of minutes and the smaller the payroll the less time it takes. On the other hand, frequent errors on a contractor's payroll can be, and often are, misinterpreted as evidence of dishonesty or lack of funds. Small contractors in small communities sometimes find that gossip travels fast. More than one contractor has found that a chance remark by a disgruntled employee has caused curtailment of credit—sometimes at a time when he could ill afford it.

As soon as the daily time has been proved, it is entered on some sort of accumulation work sheet (Fig. 8.19). As often as not, particularly if the number of employees is small, the work sheet will be the final payroll form (Fig. 8.24) itself. The former has the advantage of being much more flexible than a simple payroll form and can serve as an employee's earnings record. On the other hand, if the time is entered on a payroll form there may be no need to copy it over.

Whatever form is used, the time should be entered daily if it is submitted daily. Rate changes should be noted on the days they are effective so that, whenever a man is laid off, the paymaster needs only the man's time for that day to compute his termination pay. Note that the payroll work sheet (Fig. 8.19) has room for six rates effective during any one week.

Once the time for the week is in and entered on the work sheets, each employee's gross pay for the week is computed and a check tape is run on the adding machine to see if the gross pay, as extended, equals the total gross pay for each of the several days of the week. If they equal each other within the few cents that must be allowed for rounding off fractional-cent variations, the gross pay has probably been correctly computed. Here again it will be noted that an experienced pay-



FORM 68 10M 4-57 CPCO

O—OVER TIME. R—REGULAR TIME

PAYROLL

CONTRACT________

LOCATION OF JOB________

MADE BY________ APPROVED BY________

PAYROLL FROM________ TO________ SHEET________

BADGE NOS.	EMPLOYEES NAMES — SOC. SEC. NOS.	OCCU-PATIONS	HOURS DAY OF→ WK	HOURS TOTALS	RATES	GROSS EARNINGS AT EACH RATE	GROSS EARNINGS TOTAL	DEDUCTIONS S.U.I.	DEDUCTIONS F.O.A.B.	DEDUCTIONS INCOME TAX	NET PAYMENTS	CHECK NOS.
			O									
			R									
			O									
			R									
			O									
			R									
			O									
			R									
			O									
			R									
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			O									
			R									

Fig. 8.24 Payroll form

This is one of the many forms on which payrolls are recorded. This form is more than usually complete, since it shows the hours worked each day. This kind of payroll is usually required on U.S. government jobs because of the need to comply with the various laws governing payment to workmen on government work.

roll clerk will soon have many of the extensions memorized. The normal situation is for a man to work the regular work week at his regular rate. Thus, if a job is working six 9-hour days with time and a half for overtime, and the hourly rate is $2.475 per hour, a payroll clerk will know, without computing it, that 54 hours at straight time is $133.65. In addition, there are 14 overtime hours at a bonus rate of $1.2375 or $17.33. The total of the full 54 hours at straight time plus the bonus for 14 hours overtime gives a grand total of $150.98 which is called the gross pay. Again, it is only when an exception to the normal situation occurs that a separate computation is necessary.

Some companies provide their payroll clerks and paymasters with charts of extensions at various rates and hours. Sometimes these are used but more often they are quickly discarded. The more common errors are not in the calculation of the extensions but rather in the pure human errors of failing to put the figures down or to add them correctly. Thus the bulk of the errors will come from the usual transpositions, slides, and misread figures rather than from errors in multiplication.

To catch this type of error and localize it quickly, it is a good idea to set up the payroll by trades, and by crews within the trades. If the over-all total of gross pay shown on the payroll equals the total of all the time sheets, there is still the possibility of an offsetting error. However, if the adding machine tapes that were run each day to check the totals of each crew's time sheet against the total payroll for that day have been saved, the daily totals provide some assurance against such errors. Of course if the daily totals do not agree, errors can be quickly localized by crews so that a minimum of checking is required.

Obviously, the procedure just outlined is only one way of accomplishing the desired result. There are many others equally sound. Many old-time paymasters are like artists who obtain results by highly individual methods. Often, too, they are just as temperamental. Thus, it is not hard to visualize such a person reading the example given above and snorting: "Huh! Anybody but a goofball from the front office would know that you figure six 9-hour days as 61 hours at straight time." But the same paymaster might spend several hours excluding the overtime bonus from a month's payrolls to arrive at the correct figure for his compensation insurance report, which normally must be based on the full number of hours worked, extended at straight-time rates.

Deductions

Once the gross pay is computed and balanced, the next step is to compute the deductions. These will include, as a minimum, federal (and sometimes state) income tax withheld, and federal (and sometimes state) employment tax deductions. They may include a great many others, such as union dues, advances, mess hall, camp or commissary purchases, contributions, insurance, and sometimes payroll assignments, garnishments, attachments, or deductions pursuant to an arrangement under Chapter XIII of the Bankruptcy Act.

On certain public-works contracts care must be taken not to make deductions prohibited on U.S. government jobs by the Davis-Bacon Act or the Copeland Act, or, on state or local projects, by similar state or local statutes. Usually permission can be obtained to make any legitimate deduction, but often it must be obtained in advance.

On the other hand, failure to make deductions for taxes, for advances, or for assignments, garnishments, and the like, may subject the employer to liability for the amount not deducted.

The standard deductions made on every paycheck are relatively simple. They can be reduced to routine and their absence is a cause for question. The best example of this type of deduction is the federal withholding tax. If a form like the payroll work sheet (Fig. 8.19) is used, the number of withholding exemptions claimed is shown at the bottom of the page. This figure plus the withholding tax table and the gross pay are the only items necessary to determine the amount of the deduction. If a regular payroll form (Fig. 8.24) is used, the exemptions will be recorded beside the employee's name, usually copied from the last payroll or from data cards (Fig. 8.2–8.7). Sometimes the federal withholding tax and the social security deduction are combined in a single deduction, and the combined deduction is computed in the same manner as the withholding tax. State income tax withholding, when required at all, is usually similar to federal withholding and generally offers no more of a problem. Sometimes a combined federal and state chart is available.

Maximum deductions: Federal and state payroll tax deductions are usually computed from a chart, but they are often applied to a different maximum. For example, California requires that 1 per cent be deducted for state unemployment compensation on the first $3,600 of earnings, while the deductions required under the Federal Insurance Contributions Act (social security) apply to the first $4,800 of earnings. If an earnings record (Fig. 8.7, 8.19) is used, the cumulative gross earnings may be brought forward as a memo figure each week so that the time when such deductions should be stopped will automatically come to the attention of the payroll clerk. Such information will appear on almost any of the numerous forms of employee's earnings record. It is important to be sure that it is called to the attention of the person computing the payroll in time to prevent an overdeduction and the extra work involved in a special credit when the error is finally discovered.

If the payroll is small and the earnings steady there is no problem. The payroll clerk can usually remember whose deductions are due to be stopped. However, construction payrolls are notoriously irregular and turnover is high. Probably the simplest way to control this problem is to have the person who posts the employees' earnings record prepare a list, as he computes his cumulative totals, of any employees whose earnings are approaching the point at which deductions should be stopped. When the payroll is prepared and ready to be extended, the payroll clerk takes the last payroll and inserts a dash in the deduction square for all employees whose contributions have been completed, and a light red dot in the square when only a partial deduction is to be taken. In a state like California, it would be necessary to go through this routine twice for each employee—once at the $3,600 level and again when his earnings approach $4,800.

Union dues, bond deductions, contributions, and insurance may be deducted on each or every other payroll. If they are deducted each time, it is a simple matter to spot errors because the omission would attract attention. Otherwise it is necessary to put them on the paymaster's checklist along with the irregular deductions.

Irregular deductions: It is standard procedure for paymasters to maintain some sort of checklist to call attention to irregular payroll adjustments that might otherwise be overlooked. Any item that will be on some payrolls, but not on all of them, goes on the checklist, and no payroll is released until it is certain that all items on the checklist have been considered and either checked into the payroll or the reason for their omission determined.

Thus, items like union dues, insurance contributions, and bond deductions are sometimes deducted on one payroll each month or on alternate payrolls. Accordingly, these deductions will be on the checklist, and if they are not to be deducted on the current payroll, they will be cleared until the next one. Advances would be entered on the payroll from the file of requests, and the total amount deducted would be balanced with the total of the checks written for advances during the preceding week. The few advances that are to be deducted on more than one payroll will show up as exceptions, and can be covered by a memo in the file of requests for advances. Commissary purchases, mess hall charges, and equipment charges arise only on large jobs away from cities or towns. They are generally entered on the payroll from the camp manager's weekly report, which should, by payroll time, have been checked and approved by the accounting office. Payroll assignments, garnishments, and attachments must be kept in a current file and entered on the payroll only at the last minute. Even then, other such items may come in before the checks are distributed. Advice of counsel regarding these items should be obtained, but it is better to hold a man's check than to release one in error. Deductions under a wage earner's arrangement (Chapter XIII of the Bankruptcy Act) are usually few enough so that if they are indicated by the checklist they will be properly handled.

Verification: Once all the deductions have been entered on the payroll, they are added across to find the total to be deducted from each paycheck. Then the total of the deductions is subtracted from the gross pay to find the amount of the paycheck (usually called net pay). When this has been done for each man, the deduction columns, the "total deductions" column, and the "net pay" column are all totaled. The totals of the individual deduction columns must equal the total of the "total deductions" column; and the total of the "gross pay" column less the total of the "total deductions" column must equal the total of the "net pay" column. To those familiar with payrolls, this is elementary routine. Anyone who is unfamiliar with payrolls may find it helpful to study a payroll form (Fig. 8.24).

If a payroll has more than one page, it is better to total and balance each page and then carry the page totals to a summary page where a final balance is obtained. This not only makes it possible to localize errors more easily, but it also makes it possible, on large payrolls, for more than one person to work on balancing the payroll sheets.

Once the payroll is balanced the checks can be written. Sometimes, when more than one person is working on the payroll, the check writing starts as soon as one page is balanced so that the check writing and the balancing can proceed at the same time. If one person is doing the whole job, the balancing is usually completed first.

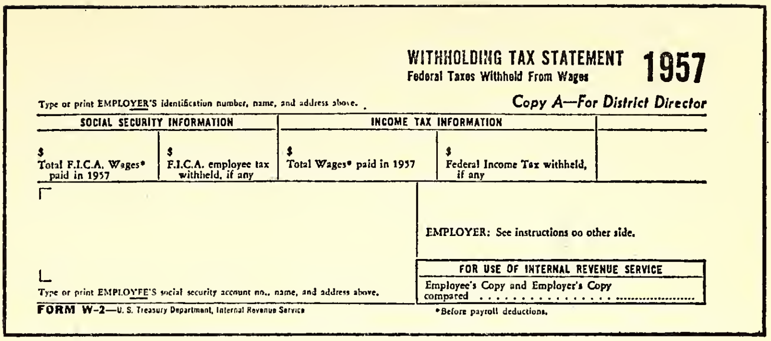
Payroll and paychecks

When time is being compiled and net pay computed there are comparatively few variations in forms and, as pointed out above, the work sheet itself may serve as a payroll. Often, however, it is necessary to provide copies of the payrolls to owners, architects, or government agencies. Sometimes, too, the payrolls so furnished must be in some special form. Also, the requirements of the federal and state payroll tax and withholding tax laws must be met. For example, each employee's earnings record must show:

1. His name, address, and social security account number
2. The total amount (including any deductions) earned during each pay period, each calendar quarter, and the calendar year
3. The amount subject to social security tax and other payroll taxes
4. The amount of taxes withheld or collected from each paycheck.

It is standard practice, based on a requirement of the law, to give each employee a memorandum, with each check, of the total earned during the pay period and the amounts deducted.

Before the end of January each year (or within 30 days after termination if his employment ends before the end of the year) each



WITHHOLDING TAX STATEMENT **1957**
Federal Taxes Withheld From Wages

Type or print EMPLOYER'S identification number, name, and address above.

Copy A—For District Director

SOCIAL SECURITY INFORMATION		INCOME TAX INFORMATION		
$ Total F.I.C.A. Wages* paid in 1957	$ F.I.C.A. employee tax withheld, if any	$ Total Wages* paid in 1957	$ Federal Income Tax withheld, if any	

EMPLOYER: See instructions on other side.

Type or print EMPLOYEE'S social security account no., name, and address above.

FOR USE OF INTERNAL REVENUE SERVICE
Employee's Copy and Employer's Copy compared ....

FORM W-2—U. S. Treasury Department, Internal Revenue Service

*Before payroll deductions.

Fig. 8.25 Form W-2—withholding tax statement

This form may be privately printed so as to provide a copy for the employer's records, unlike the forms furnished by the government. The form is available in snap-out style with single-use carbon paper inserted to save time in preparation.

employee must be given a form W-2 (Fig. 8.25) showing the total compensation for the year and the income tax and social security (F.I.C.A.) tax withheld.

To satisfy all these requirements with a minimum of paper work, a large number of systems have been devised. Some prepare the paycheck, the payroll and employee's earnings record at one writing by means of carbon copies held in position by the pegs on the peg board (Fig. 8.26). This system seems quite logical, but among construction paymasters pegboards have never gained much popularity. They are not well adapted to rapid turnover of employees, and the carbon copies have not proved very satisfactory under field conditions. Moreover, although theoretically all records in this system would always be in agreement, often an error is corrected on one copy and not on the others, with the result that there is often trouble at the end of the quarter when the social security and withholding tax returns are reconciled with the payrolls. Generally speaking, the pegboard systems work best on the smaller payrolls when there is very little turnover and only one copy of the payroll is required.

A similar principle is employed by the various bookkeeping machine payroll systems (Fig. 8.27). The problems are also similar. If a contractor has a large payroll, and numerous terminations, a special payroll can be devoted to the terminations, with the result that there are generally fewer errors caused by hurried workmanship. Also, if the volume of work justifies the use of bookkeeping machines, it probably

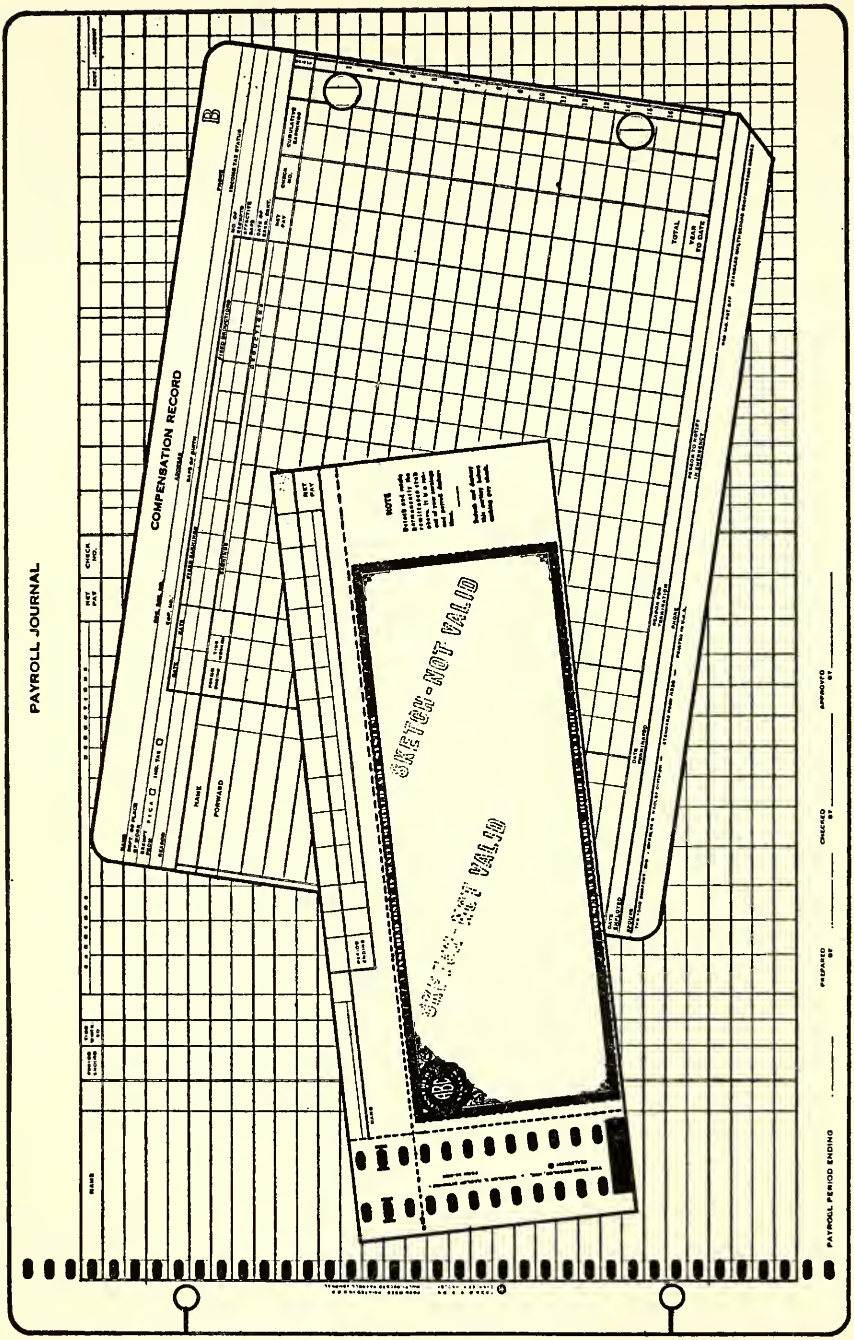
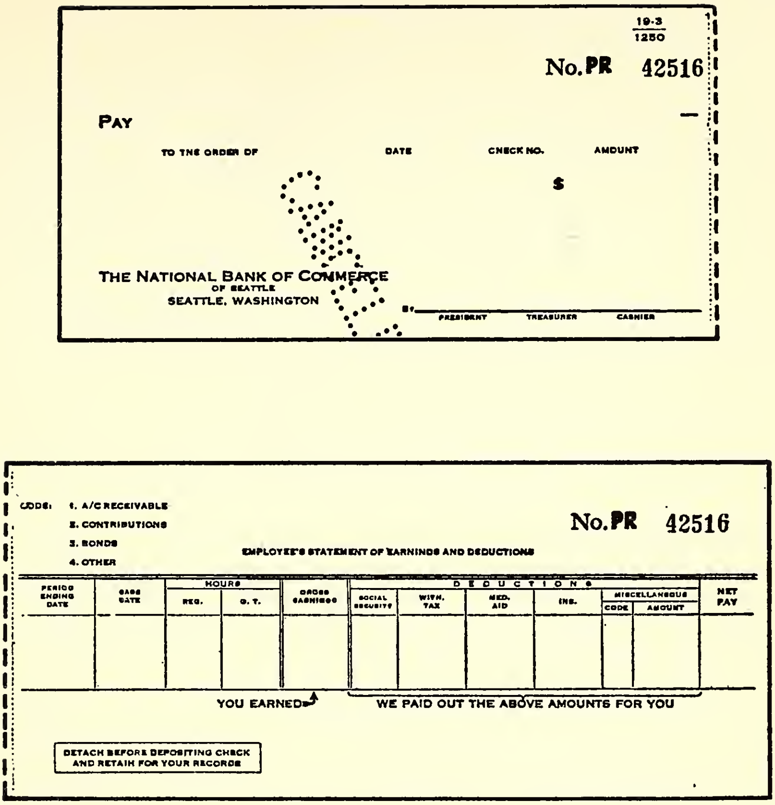


Fig. 8.26 Timemaster pegboard payroll outfit



19-3
1250

No. PR 42516

PAY

TO THE ORDER OF DATE CHECK NO. AMOUNT

$

THE NATIONAL BANK OF COMMERCE
OF SEATTLE
SEATTLE, WASHINGTON

BY
PRESIDENT TREASURER CASHIER

CODE: 1. A/C RECEIVABLE
2. CONTRIBUTIONS
3. BONDS
4. OTHER

No. PR 42516

EMPLOYEE'S STATEMENT OF EARNINGS AND DEDUCTIONS

PERIOD ENDING DATE	BASE RATE	HOURS		GROSS EARNINGS	DEDUCTIONS						NET PAY
		REG.	O. T.		SOCIAL SECURITY	WITH. TAX	MED. AID	INS.	MISCELLANEOUS		
									CODE	AMOUNT	

YOU EARNED WE PAID OUT THE ABOVE AMOUNTS FOR YOU

DETACH BEFORE DEPOSITING CHECK
AND RETAIN FOR YOUR RECORDS

Fig. 8.27 Paycheck for use with a bookkeeping machine payroll system

The headings on the check correspond to columns on the payroll records. The information is transferred by means of a strip carbon.

justifies other auxiliary equipment (such as Addressograph or Elliott) to place the names of employees on the checks and on payrolls, and photographic equipment to make such extra copies as may be required. Bookkeeping machine systems usually work well on centralized payrolls when the volume is large enough to justify the heavy initial cost of the machines and the cost of printing special forms. For the average small construction company, bookkeeping machine payroll systems are not practical because of their cost.

When payrolls are kept in the field, a machine system, even on a fairly large job, exposes the contractor to the risk of serious delay if the machine breaks down and specialist repair men are not available on short notice.

One system which has proved quite successful in a variety of small construction operations calls for the use of a check with an original and three carbon copies printed, with one-use carbons, in sheets of four or five checks (Fig. 8.28). If a combination worksheet–earnings record (Fig. 8.19) is used, there is no need for a separate employee's earnings record, and if a separate payroll is not required the third carbon copy of the checks, which remains in the sheets, can be used as a combination payroll and a payroll check register. When a separate payroll is required it must, of course, be prepared from the work sheets or from the checks themselves. Under such a system, the first carbon copy of the check, printed in the form of a withholding notice, accompanies the original to the employee and serves as the employee's record. The second carbon copy is filed in an employee's folder (Fig. 8.7). The third carbon copy is left in sheets and bound in numerical order.

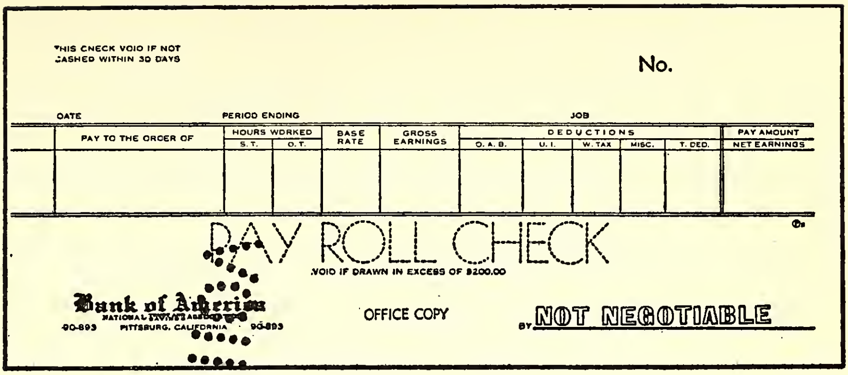
Still another form of payroll check is the two-stub type (Fig. 8.29). The second stub is merely the employee's record, and is to be torn off before the check is cashed or deposited. This type of check works quite well on very small payrolls and, since it can be obtained preprinted at most banks, is quite inexpensive. It would be rather costly to use on a large payroll because of the time required to prepare it. When this type of check is used, the payroll is usually a check register, and any additional copies of the payroll that might be required must be separately prepared.

When the paychecks have been prepared, two adding machine tapes should be run. The first should be run on the amount of the checks in the figures that usually appear in the right hand margin. The second should be run on the amount in words or, if a check writer is used, on the amount perforated into the check. Naturally the two tapes must agree.

In summary, it should be stated that the procedures and forms described are only illustrative, and not exhaustive. The variations are endless. The check points and the procedures used in reaching them vary as widely as the people who use them and the conditions they are designed to meet. There are, however, five points which all sound payroll systems have in common:

1. The basic time data and rates must be reviewed by someone who knows what is being done, where it is being done, who is doing it, and the proper hourly rates applicable to each class of work.

2. Actual work done, and its cost as represented by the payrolls, should be compared regularly with the estimated progress as reflected



THIS CHECK VOID IF NOT CASHED WITHIN 30 DAYS

No.

DATE

PERIOD ENDING

JOB

	PAY TO THE ORDER OF	HOURS WORKED		BASE RATE	GROSS EARNINGS	DEDUCTIONS					PAY AMOUNT
		S. T.	O. T.			O. A. B.	U. I.	W. TAX	MISC.	T. DED.	NET EARNINGS

PAY ROLL CHECK

VOID IF DRAWN IN EXCESS OF $200.00

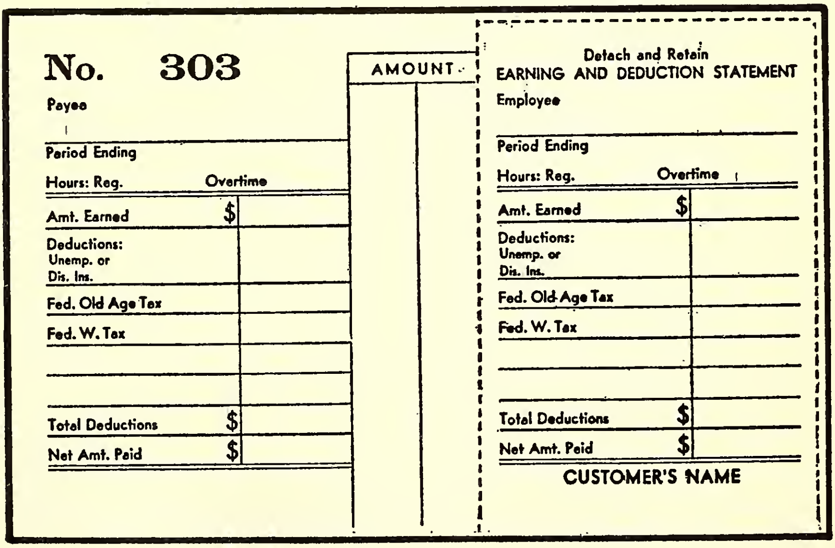
Bank of America
NATIONAL TRUST AND SAVINGS ASSOCIATION
90-893 PITTSBURG, CALIFORNIA 90-893

OFFICE COPY

BY **NOT NEGOTIABLE**

Fig. 8.28 Multiple-copy paychecks

These checks are available with as many as five carbon copies and in sheets of as many as five checks.



No. 303

Payee

Period Ending

Hours: Reg. Overtime

Amt. Earned	$	
Deductions: Unemp. or Dis. Ins.		
Fed. Old Age Tax		
Fed. W. Tax		
Total Deductions	$	
Net Amt. Paid	$	

AMOUNT

Detach and Retain
EARNING AND DEDUCTION STATEMENT

Employee

Period Ending

Hours: Reg. Overtime

Amt. Earned	$	
Deductions: Unemp. or Dis. Ins.		
Fed. Old Age Tax		
Fed. W. Tax		
Total Deductions	$	
Net Amt. Paid	$	

CUSTOMER'S NAME

Fig. 8.29 Stub for 2-stub paycheck

This type of stub is commonly used by contractors with fifteen to twenty employees. The check itself is not shown.

in the bid estimates. The payrolls should be designed to facilitate preparation of comparative unit labor costs.

3. Each step in the computations must be subject to some form of internal check in terms of both arithmetical accuracy and reasonableness.

4. Checklists or tickler files need to be maintained to see that unusual and nonrecurring items are not overlooked.

5. Forms must be designed so that the unit cost of preparing each paycheck is the minimum practical for the contractor's individual circumstances.

No matter how carefully payrolls are made nor how many times the data are checked before they finally reach the completed paychecks, there will still be errors. Usually they will be minor ones, and often they will be traceable to facts that the person preparing the payroll did not know and possibly had no way of knowing. Still, a fair proportion of these errors can be eliminated by a critical reading of the payroll and comparison of the payroll with the actual checks. When such a final precaution is feasible, it is quite fruitful. Often it is done by the project manager or superintendent. For example, on one occasion it led to a conversation something like this:

"Hey! Where did Whitey and his gang work last week?"

"They were down clearing on the power line."

"Why aren't they getting paid then?"

Somebody had slipped. Whitey had failed to turn in his time daily because he and his crew were working several miles away. A separate page in a payroll that averaged over 20 pages had been reserved for that crew. Somehow it had been missed and, except for the project manager's final scrutiny the error would not have been discovered until the men had complained.

Distributing paychecks

One positive invitation to payroll fraud is to permit the foremen to distribute the paychecks. They may be distributed at a pay window as the man leaves the job, or by the paymaster, but if the foreman delivers the checks he is being tempted to commit fraud through collusion with some of his men. When a paycheck is delivered by someone who does not know the payee personally, identification should be required. Usually a badge number or identification card will suffice. Sometimes it is advisable to require a payroll receipt and a thumb print. The method used should be reasonably calculated to prevent misdeliveries. Sometimes, through error, or through fraudulent identification, a misdelivery will occur. When it does, payment on the check should be stopped as soon as the misdelivery is discovered.

At frequent but irregular intervals the office manager, an auditor, or someone else outside the payroll department should distribute the checks. Checks that cannot be delivered should be listed immediately and the reason why the employee was not on the job should be determined. Usually it will be found that he was merely absent for some explainable reason. However, if nonworking employees are being carried, their presence on the payroll will be discovered, and if fraud is being contemplated it will be discouraged.

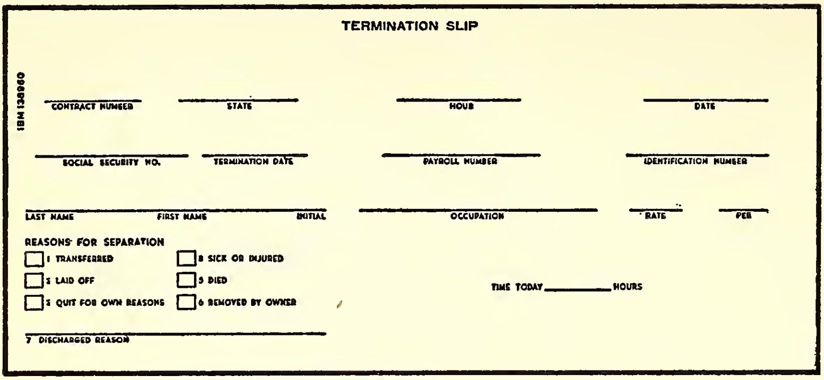
Sometimes employees die while they have wages due them. When that happens, the check may usually be paid to the deceased employee's estate (Estate of John Doe). It should be paid in no other way except on written instruction of the probate court or on advice of counsel.

Occasionally an employee is in jail or otherwise unable to call for his pay. On such occasions a great deal of care must be exercised. Often creditors, divorced wives, relatives of the employee, and sometimes complete strangers try to claim the check. If it is delivered to such persons without the employee's written authorization the employer may find he is liable for misdelivery of the employee's property.

When a paycheck is reported lost or stolen, an immediate attempt should be made to stop payment on it at the bank. If the check has been stolen the police should also be notified. In most areas near a large construction job there are one or two bars or taverns where a great many of the employees collect in their off hours. Often a direct call to these places will be effective in heading off the cashing of lost or stolen paychecks. The same procedures are in order when blank paychecks are stolen. The bank, the police, and the local merchants should be notified. If possible, the numbers of the missing checks should be supplied and, if too many are missing, it may be necessary to change banks. If this is done, arrangements should be made with the bank in which the payroll account is carried to honor any legitimate checks that may be outstanding. Needless to say, all blank checks should be kept under lock and key.

Termination forms and procedures

Not too many years ago when an employer wanted to fire a man he fired him and that was all there was to it. Today, for better or worse, the wise employer keeps records of terminations as well as hires. He makes a record, among other things, of the employee's correct name, his badge or payroll number, his social security number, the exact date



TERMINATION SLIP

IBM 138960

CONTRACT NUMBER
STATE
HOUR
DATE

SOCIAL SECURITY NO.
TERMINATION DATE
PAYROLL NUMBER
IDENTIFICATION NUMBER

LAST NAME
FIRST NAME
INITIAL
OCCUPATION
RATE
PER

REASONS FOR SEPARATION

☐ 1 TRANSFERRED
☐ 2 LAID OFF
☐ 3 QUIT FOR OWN REASONS
☐ 4 SICK OR INJURED
☐ 5 DIED
☐ 6 REMOVED BY OWNER

7 DISCHARGED REASON

TIME TODAY ________ HOURS

Fig. 8.30 Termination slip

and reason for his termination, and wherever possible, his signature. This information is usually recorded on a termination slip (Fig. 8.30) and is useful in many ways.

For example, a termination slip signed by the employee and the person who ordered his termination, and giving the reason for the termination, can be extremely important if an employer is later charged with unfair labor practices, illegal discrimination, or violation of a labor contract. The necessity of making out and sending to the head office a termination slip on all employees who are laid off, who quit, or who are discharged for cause, often keeps a paymaster honest who might otherwise be tempted to carry the man on the payroll for a few days after he leaves. The reason for termination may, at times, serve as a guide if there is occasion to consider rehiring the employee—a very common occurrence in the construction business.

One of the most important reasons for having an accurate record of terminations, and particularly the reasons for making them, is tax saving. All states now have unemployment insurance laws. Most of them have some provision for reducing the unemployment insurance tax of those employers who maintain steady employment. Usually this is done by maintaining an account with each employer and charging his account for all unemployment payments made to his former employees. In computing the amount in an employer's "reserve" account, the employer is not charged, and the employee is assessed a waiting period, if the employee quit voluntarily or was fired for misconduct. In a dispute over this type of item, good records, regularly kept, are very valuable. Moreover, unless the employer has a record of the reason for the termination he may never know which unemployment insurance applications to protest. As a result he may protest none at all and have to pay a higher rate of payroll tax than some of his competitors.

Termination paychecks

When a man is laid off he should be paid to the end of the half day. In other words, if he is laid off in the morning, he should be, and probably must be, paid for the full half day. If he is terminated in the afternoon it is usual to pay him for the full day.

If time has been reported, checked, and posted daily, there is no problem in securing the time for the preceding days. There remains only the problem of determining whether or not there are any exceptions in hours or rate for the day of the termination. If time is reported weekly, it will be necessary for the foreman or superintendent to get the information to the paymaster in time and in enough detail to permit accurate preparation of the man's final payroll check. If the termination checks are late there may be a waiting-time assessment. If they are short, there may well be claims made through the state labor commissioner. If they are over, there is virtually no chance to recover the excess.

The most effective procedure is, whenever possible, to plan the termination one day in advance and give the paymaster the names of the men to be laid off. Then, on the last day, the superintendent can usually arrange the work so that the men to be laid off do nothing to justify an exception in the time or rates. The paymaster can then prepare the checks on the basis of the last day being a full day at regular rates.

If the job is small and close to the head office, or if there is a decentralized payroll, the information necessary for the termination checks is readily available and there is no problem. If the payrolls are centralized and the job is large enough to justify such a measure, the project manager or superintendent can have a special bank account for issuing termination checks. However, when checks are written on the job without adequate control, the contractor must be prepared to accept the consequences. The results are often entirely satisfactory, but then again they also may include incorrect payments, payroll fraud, and excessive costs or losses. One variation, in which the project manager writes termination checks from an imprest bank account, is to let the superintendent telephone the information to the paymaster as early as possible on the day of the termination. Then the paymaster can compute the amounts due and telephone the figures back to the job.

In discussing preparation of the regular payroll checks, a checklist of deductions and other items was mentioned. This list is equally applicable, if not more so, to the preparation of termination checks. However, there are additional factors to be considered when drawing termination checks. Extra care must be taken to see that all property issued to the employee is returned, as well as all company identification. If any bond or other savings funds are being withheld the employee is entitled to receive any balance to his credit. Company policy or the union contract may entitle the employee to pay in lieu of vacation. Notices may be required to the union, creditors, group insurance carriers, or others. In short, if there are a substantial number of special considerations to be taken into acount, a special termination checklist is in order. This list is even more necessary in very small companies where the routine is inclined to be hurried and the person in charge of payrolls has many other duties.

Once the paymaster has collected all the data, the preparation of the check itself sometimes creates certain problems. If there is much turnover, it is often advisable to prepare termination checks from a separate number series and to record them on a separate termination payroll. In very large operations it is even a good idea to have termination checks of a different size, shape, or color, so that they will show up quickly in bank reconciliations.

Most termination checks are handed to the employee directly. Sometimes the terminated employee will receive his form W-2 and his copy of the termination slip with the check. When this procedure is followed, the man may be asked to sign off on the termination payroll. Some companies mark either the check or the voucher with such words as "termination" or "final check." Usually, however, the check is merely handed to the employee, and when he cashes it, the cancelled check serves as a receipt for the payment. This procedure is generally adequate.

When the man is not present to accept the check in person there are other special considerations. If the check is sent through the mail, it is well to send it by registered or certified mail to minimize the risk of forgery or delivery to the wrong party. If the check is sent through the employee's labor union, certified mail will provide evidence of the fact that it was received by the union, and the identity of the person receiving it. Often retroactive paychecks are sent to the union, and it is well to have someone in authority at the union hall sign a receipt for the whole retroactive payroll.

Special payroll problems

Wage regulation: It is not the purpose of this volume to supply detailed coverage of special wage regulation. However it is worthwhile mentioning the more important federal laws affecting construction payrolls. Foremost of these is the National Labor Relations Act, which controls all dealings between employers and any employees who wish to bargain, collectively or otherwise, regarding wages, working conditions or any other pertinent matter.

Second in importance to the National Labor Relations Act is the Fair Labor Standards Act (the so-called "wage and hour law"). It has been held that, for some new construction, even when U.S. government financed, the wage and hour law is inapplicable because it deals wholly with interstate commerce. Just why this is limited to new construction has never been too clear, but it remains so at this writing.

On U.S. government contracts the Bacon-Davis Act, the Copeland Act and the Walsh-Healey Public Contracts Act all deal with measures to assure everyone concerned that all employees are paid at hourly rates equal to or greater than those set by the contract; that there are no "kickbacks" required; and that no unauthorized deductions are taken from the employees' pay. On all U.S. government work it is well to determine the effect of these acts on the contract, at or before the time the contractor's bid for the work is submitted. Certainly such a determination should be made no later than the time that the contract is signed. Sometimes rates set by the Secretary of Labor upset local differentials or otherwise create difficulties. Very often it is necessary to get special permission in advance to make such payroll deductions as charitable contributions or even camp or mess hall deductions.

Many state and local governments have similar laws governing payrolls on their contract jobs. It is wise to inquire at the time of bidding, and again at the time of signing public contracts, exactly what the rules are for that particular job.

Attachments: Every contractor deals with a certain number of creditor claims which, by law, must be deducted from employees' paychecks. Creditors and ex-wives are the source of most executions, garnishments, or attachments of wages and, if any of these documents is served on an employer, he renders himself personally liable if he pays the employee without satisfying the levy. The same is true of assignments of wages.

It is important to know the rules of the state where the payroll is being made when such claims arise. It is good business practice, from the employer's point of view, to use, where possible, every available means to protect employees from levies of this type, and to know every legal means available, without undue expense, to nullify or mitigate their effect. However, once an employee's creditors are levying on his paycheck regularly it is better business, ordinarily, to lay him off and employ someone else. There are several reasons why this course should be followed.

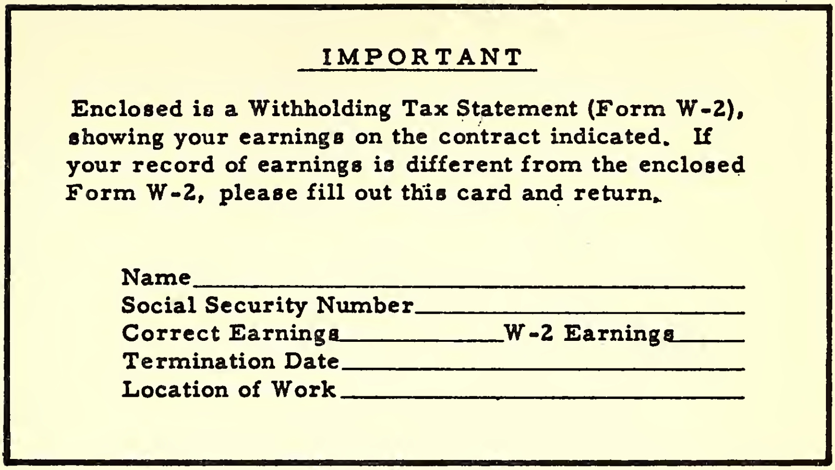
First, a man in financial or domestic difficulties, or both, is not likely to be a good employee. Second, if it finally becomes necessary to lay a man off because the garnishments are taking all his paycheck, it is better for job morale to have taken strong steps for his protection at the outset. Third, a construction company, particularly a large one, can easily let itself become a collection agency for every credit store and finance company in the area if it cooperates too freely with its employees' creditors. Fourth, a lineup of collectors, process servers, book makers, and ex-wives at the pay window can deter capable employees from working for a contractor who permits such a situation to develop.

Any attempted collusion between employees and paymasters, foremen, and others to defeat the creditors and save the harassed employees' jobs by extra-legal means can only result in additional trouble for the employer. Often such actions may result in actual financial liability for the employer. Such misdirected sympathy should be strictly forbidden, and when discovered should be grounds for discipline. All employees should have careful instructions to immediately report to the head office the service or attempted service of any legal document.

Advances: Payroll advances are a necessary evil. They should be discouraged as much as possible because, when used to excess, they can materially increase the cost of preparing payrolls. One way to discourage them is to require written authorization. Also, a company loan fund to provide wage and salary loans at reasonable interest rates might be provided.

Payday: If the job is working six days a week, payday should be Saturday afternoon. If the job is working five days a week, payday should be Friday. Hangover inefficiency and absenteeism may be held to a minimum by this means.

Fraud: Payroll fraud has occurred in one form or another any time people are paid for time not spent or work not done. If labor productivity falls below a reasonable standard, one of the possible explanations is payroll fraud, which must therefore be considered when the unit costs of labor go up. Often, however, the amounts involved are either not large enough, or cost keeping on labor is not accurate enough to cause fraud to show up in this way.



IMPORTANT

Enclosed is a Withholding Tax Statement (Form W-2), showing your earnings on the contract indicated. If your record of earnings is different from the enclosed Form W-2, please fill out this card and return.

Name______________________________
Social Security Number____________________
Correct Earnings____________**W-2 Earnings**______
Termination Date________________________
Location of Work________________________

Fig. 8.31 Information card

If this notice is enclosed with the employee's copy of the Form W-2, payroll errors and frauds may be discovered.

The next best substitute is alert auditing. Surprise face checks for absenteeism; surprise distributions of paychecks by someone outside the payroll department; transferring accountants, timekeepers, and foremen so that collusion will tend to be broken up before it starts; regular reconciliation of payroll bank accounts; regular comparison of endorsements on checks with known signatures—all these and many similar devices are effective in creating the greatest safeguard of all, the knowledge by all concerned that the payrolls are being checked and that fraud will probably be discovered.

One possible source of control that is often overlooked is the employee's own records. Some companies now send out with the employee's withholding receipt (Form W-2) an information card (Fig. 8.31). When these forms reach the employee they occasionally turn up payroll padding that has gone undetected for months, or even years. A single disclosure of this kind can prove a more potent deterrent to payroll fraud than hundreds of hours of auditing.

9

Accounting for Materials and Supplies

The object of accounting for materials and supplies is to help management collect for them. Management cannot ordinarily collect for materials or supplies that are stolen, lost, wasted, or spoiled by exposure, nor can it collect for materials or supplies not included, in one way or another in the amounts billed to customers. This means that physical as well as financial controls are needed, and one without the other cannot protect the contractor from losses. The fact that materials and supplies are usually charged directly to cost does not mean that they have been fully expended at the time they are sent to the job. They represent a very real, and usually, a very substantial value and unless that value is protected it can easily be lost.

Physical control

Physical control of materials and supplies involves four steps:

1. Control of purchasing
2. Control of receiving
3. Protection against misappropriation or theft
4. Protection against loss or damage.

Purchasing has been discussed in Chapter 5. It is enough here to point out that theft, loss, waste, or spoilage cannot cost the contractor any money unless it occurs after he has received the goods. Buying and scheduling deliveries only as materials and supplies are needed, can avoid a great many of the problems of physical control before they arise. When material shortages, rising price levels or other special conditions call for buying in advance of requirements, the costs of storage, handling, and protection must be considered in deciding what, when, and how much to buy.

The problems of receiving and protecting materials and supplies vary with specific conditions. Therefore, it is usually an oversimplification to say that any particular contractor has a good or bad system for handling materials and supplies. Any system may be good, bad, or indifferent depending upon the circumstances. That is why problems of materials and supplies accounting are frequently troublesome in the construction industry.

This difficulty does not mean that a construction company cannot adopt standard forms and procedures for its materials and supplies accounting. On the contrary, such action is absolutely essential in maintaining the required controls. It does mean that the establishment of a system is only the first step. Continually changing conditions call for corresponding variations in the application and use of the standard forms and procedures, for supplementing them, suspending some parts, extending others, and so on.

Unlike manufacturing systems which, once established, can be policed and operated satisfactorily for indefinite periods, the construction industry must devise its accounting systems for flexibility and apply them in accordance with current job requirements. For that reason, this chapter confines itself to those problems, principles, procedures, and, most of all, to those objectives that a contractor or his accountant must consider in controlling and accounting for materials and supplies.

Physical control at the job site

In approaching the problems of physical control over materials and supplies delivered to the site of a construction job, these questions must be considered:

1. What can be done to make sure we receive everything we sign for?
2. Is it easy to steal?
3. Is it worth stealing?

4. Can the weather hurt it?
5. Does the risk of loss justify the cost of protection?
6. At the time it is physically used on the job, will the resulting paper work cause the proper cost account to be charged with the correct amount of cost?

A few examples of how these questions are analyzed and answered under a variety of job conditions will serve to suggest the way similar problems arising on specific jobs or under specific circumstances may be treated.

Stone: The least vulnerable of all construction materials is stone or riprap rock. Its weight is determined at the quarry; it is not worth stealing; and it is completely impervious to weather. It is almost invariably charged directly to the job at the time of purchase and is extremely difficult to divert to other jobs. If it is hauled by rail to the job site, care must be exercised to see that it is unloaded as quickly as possible to save demurrage on the railroad cars, although sometimes it is cheaper to pay demurrage than it is to handle the rock twice.

Steel: Prefabricated steel beams, which are usually placed when delivered, rarely cause any protection problems. They would be difficult and costly to steal and weather cannot harm them. Still, during the severe steel shortage in the early stages of World War II, some steel beams stockpiled on construction jobs were stolen. If such a risk were substantial it would be necessary to evaluate the potential delay to the job as well as the cost of replacing the beams in deciding how much could or should be spent for protection.

Cement and concrete: Ready-mix (and usually dry-batch) concrete is placed immediately upon arrival at the job site. Here the contractor faces either the receiving problems inherent in pouring the concrete or excessive waiting-time charges for failure to unload it in the time allowed, or both. Insofar as the receiving problems are concerned, it is usually sufficient to compare the cubic content of the forms filled in each day's pour with the yardage shown on the delivery tickets for that day. It is necessary to scale the forms anyway in order to determine the amount to order. Sometimes the requisite physical control of concrete can be secured at the batch plant; sometimes weighing is required. Either way, it must be remembered that it always takes more than a cubic yard of material to make a cubic yard of concrete. Usually, however, scaling the forms is adequate. Excessive waiting time is essentially an operational problem, but since it increases the cost of materials, it becomes a matter of concern to anyone responsible for materials and supplies accounting (Chap. 13).

Concrete may be mixed at the job site: if the volume required is large enough to make it profitable; if the forms cannot be reached with ready-mix trucks; if the haul is too long; or if, for some reason, ready-mixed concrete is not economical. Job site mixing calls for stockpiles of sand, gravel, and sometimes crushed rock. On large jobs, if a local deposit can be found, sand and aggregate are often produced at the site and materials of this kind rarely create any storage or protection problems.

Even if such materials are hauled in by truck and stockpiled, the value per cubic yard is, as a rule, not large enough to justify the cost of any substantial security measures. Usually it is enough to scale the stockpile occasionally and compare it with the amount that should be on hand after allowing for the amount that had to go into the volume of concrete already poured. Sand used for gunite operations must, of course, be kept dry, and it is sometimes necessary either to store it indoors or to cover it with tarpaulins. Bulk cement is usually delivered into silos where its quantity can easily be checked and where it is protected from the weather. It is a simple matter to padlock the loading gates on the chutes to prevent theft.

Materials requiring medium protection: Rough lumber, reinforcing wire or steel, pipe (whether concrete, clay, steel or cast iron), conduit, steel scaffolding, steel concrete forms, form ties and clamps, drums of form oil, bricks, concrete blocks, clay tile, and metal lath are typical of a large group of items which may or may not be stored out of doors depending upon local weather conditions. Usually when the weather is good enough to permit construction to proceed, it is good enough to permit such items to be stored outside. However, many of these item are vulnerable to theft and if the job location is such that it can be readily reached by truck, it frequently pays to store such items inside a fenced enclosure protected by a watchman, floodlights, a burglar alarm, or all of these. The receiving problems generally encountered in dealing with the types of items just discussed, and those encountered in dealing with items in the group to follow, are enough alike so that the two groups may be discussed together insofar as receiving procedures are concerned.

Materials requiring much protection: Finish lumber, sash, doors, nails, finish hardware, plumbing and electrical fixtures, sacked cement, plaster and lime, finish tile, wire, switchboxes, acoustical tile, floor coverings, heating and air conditioning units, hand tools, surveying instruments, pneumatic and power tools, hose, hard hats, raincoats, rubber boots, extension cords, small motors, small pumps, bench grinders and light welding equipment and supplies—all are typical of the kinds of materials and supplies which require maximum protection from the weather and are extremely vulnerable to theft. Another group of items frequently classed with this group is gasoline, lubricating oil, repair parts and tires. Since gasoline and oil are usually stored in drums or in underground tanks, they do not require as much protection against the weather but their vulnerability to fire and theft is very high.

When stored at the job site, items in these groups should be stored under cover and under lock and key. Materials to be incorporated into the work should be issued only at the request of the foreman whose crew is installing them and usually in quantities not exceeding one day's requirements. Tools should be checked out either on tool check, brass (Chap. 8), or charge-out slip. Supplies should be signed for when taken. If problems of time, distance, or volume make it impractical to charge out tools individually, they may be checked out to the foreman, who is then made responsible for their return.

It is foolish for the contractor to think that the job is too small or that he knows his men too well for this precaution. A small operation where tools and supplies in this class are loosely handled can lose as much (or more) proportionately, as a large one. It is true that many smaller construction companies issue such items from a stockroom, but if this practice is not feasible even a small job cannot afford to be without a locked tool shack and a padlock on the spigot of the gasoline drum. Where, as frequently happens, lumber, bricks, concrete blocks, or similar materials are stockpiled without physical protection, it is usually wise to employ a local watchman service to cover the area in its regular rounds. Sometimes, also, the area may be floodlighted. In the absence of such precautions, a contractor may find himself providing the entire neighborhood with materials for outhouses and chicken coops.

Receiving materials and supplies

A great deal of money may be saved by taking proper precautions when receiving job site deliveries of materials and supplies of the kinds mentioned in the last two groups. To be certain the items delivered correspond with the delivery receipt, someone must count or measure, inspect, and sign for, each incoming delivery. On large jobs where one or more warehousemen are employed, incoming deliveries can be, and usually are, checked and counted. The more difficult problems arise on smaller jobs where volume does not justify the employment of a receiving clerk.

Ordinarily, the key to adequate receiving procedures is knowing when deliveries are to be made and having someone there to receive them. In other words, the problem is primarily one of timing and scheduling so that responsibility can be narrowed down to one or two people. If, as so often happens, there is no fixed responsibility for receiving, material shortages will inevitably develop.

It is standard commercial practice for the person making the delivery to secure the signature of someone acknowledging receipt of the shipment. It is entirely practical to require the person signing to take whatever steps may be reasonable in the circumstances to check any deliveries for which he signs. This procedure is basic. If such a check is not made, there can be little or no control of receiving materials or supplies.

If the operation is too small for a job warehouse but large enough for a field office, the field clerk or timekeeper will usually be the logical person to check in materials and supplies. If a repairman or maintenance man is on the job, he can be made responsible for receiving spare parts, tires, gasoline, and oil. On very small jobs, the foreman may be made responsible for receiving although, generally speaking, a foreman's time can be more profitably spent in planning and supervision. Deliveries of materials to job site locations may have to be checked and signed for by the foreman for lack of anyone else to whom the work can be delegated.

If traveling timekeepers or job accountants are used to cover more than one job, it is often possible to schedule deliveries and the timekeeper's visits so that the two coincide at least most of the time. The foreman can then handle such current deliveries as those of ready-mix concrete. It is not uncommon for a subcontractor to find that his part of the work on a particular job is not large enough to justify having his receiving done by his own personnel. In such cases, it is often possible to arrange with the prime contractor or one of the larger subcontractors to accept his deliveries. Occasionally a foreman will find that he has a truck driver or a laborer on the job to whom he can safely assign receiving duties. In this event, or if the foreman handles receiving personally, even the smallest job can have the protection to be obtained from checking the materials and supplies actually received against the items shown on the delivery receipts. The main thing is to recognize receiving as a major source of potential savings; to see that safeguards that are practical under the circumstances are embodied in a set of procedures to meet the problems peculiar to the job; and then to see that those procedures are enforced.

In this connection it should be stressed that no procedure, by itself, will operate successfully. It must be policed. If the contractor is on the job personally, he should check occasionally to see that the receiving routines are being followed. If the company is large enough to use a general superintendent or a field auditor, then that person should make job site receiving procedures one of the points on his regular checklist.

Job site storage

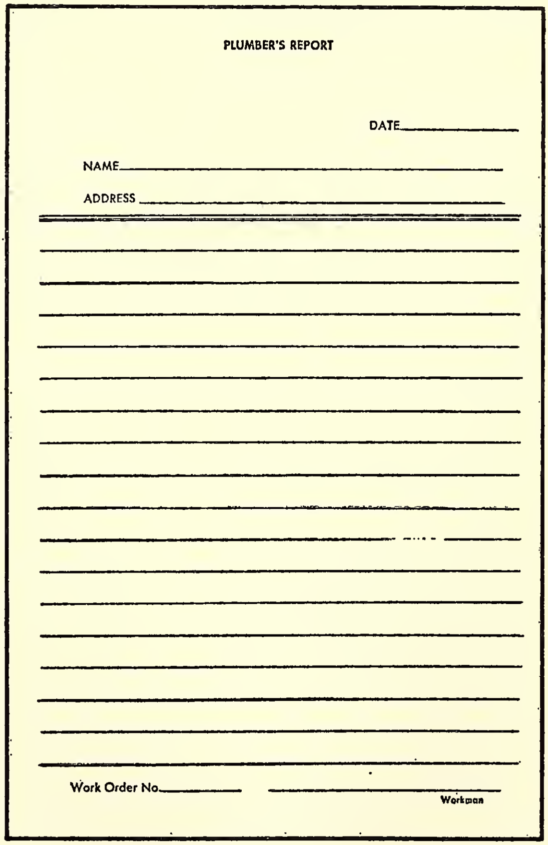
In discussing physical control of job site deliveries, six questions were posed as tests to determine what controls and protective measures were justified on any particular job. The same tests are applicable where materials, supplies, and small tools are kept in a stockroom, a warehouse or a yard. Basically, any successful system for physical control follows these four rules:

1. If you are charged for something, be sure you receive it.
2. Once you have it, store it where you can find it.
3. Be sure it is safe from theft and the weather.
4. When you release it, be sure you know who took it; what he got it for; whether he has a right to have it.

Even the smallest of construction companies has a back room or a shed where some materials, supplies, and small tools are kept. The larger companies, of course, have yards and warehouses in which may be found a large variety of materials, supplies, tools, and equipment. Between the two extremes are all sizes and kinds of off-job storage facilities. Some types of contractors (plumbers and electricians, for example), may keep a considerable inventory of new materials and supplies on hand for delivery, as needed, to the jobs. Others use their stockrooms, warehouses, and yards principally to store used materials, equipment, and supplies brought in off the jobs as surplus or salvage. In most construction companies, off-job storage facilities are used for both purposes.

If practical and economical, there is no better way to control materials and supplies at the job site than to send them out only as needed, which may well require a warehouse stock. An excellent example of this type of operation is found among plumbing and painting contractors working on small jobs. Such a procedure will be satisfactory for some, but not all, types of materials and jobs. For example, a plumber's repair truck will usually be a small stockroom on wheels. However, if a particular job calls for setting a water heater, that item will come from general stock, as will the soil pipe or galvanized pipe required for the work scheduled for a particular day. With such repair trucks, it is not unusual for the operator to turn in a daily or weekly stockroom order for the items used, so that a standard stock can always be maintained on the truck. Or, the operator may turn in, for each job, a report (Fig. 9.1) from which a stockroom requisition may be prepared in the office.

There are other examples of job site storage in which the problems and procedures are so similar to those of the off-job stockroom or warehouse that they may be considered together. The supply room (or supply barge) on a hydraulic dredge, the truck-mounted rolling warehouse used by road and pipeline contractors, and, of course, the job site warehouse often maintained on large building jobs, may well



PLUMBER'S REPORT

DATE__________

NAME______________________________

ADDRESS ______________________________

Work Order No.________ ________________ Workman

Fig. 9.1 Plumber's report

This form is commonly used as a source of materials and time control, and of billing data, from repair truck operations.

all be operated in the same way as a stockroom at the site of the contractor's general office.

One fact cannot be overemphasized. If it is worthwhile to maintain a stock of materials, supplies, and equipment, it is worthwhile to maintain adequate control over it. A stockroom or warehouse to which everyone has access is an open invitation to theft, misappropriation, and waste. In such a stockroom or warehouse the contents will tend to be continuously disarranged so that, even when desired articles are there and in usable condition, it takes so much time and effort to find them that it is easier (and sometimes cheaper) to buy more than to try to locate those on hand. Even when the desired materials or supplies can be found in such a warehouse, the chances are good that when they reach the job they will be found to be in unusable condition, with the result that the job is delayed and more cost is incurred than if the warehouse stock had been ignored in the first place.

Usually, unless a contractor's operation is very small indeed, it pays to have one employee stationed in the stockroom or warehouse to receive incoming shipments, clean up and repair the equipment, check outgoing shipments, maintain whatever stock and equipment records may be necessary, and keep whoever is doing the buying advised of the items that are on hand so that they will not be duplicated.

In very small operations, these functions are usually performed by the contractor himself or by a combination bookkeeper, purchasing agent, and stock clerk, in much the same way that a field clerk might operate a small stockroom on a job site. However it may be done, unless someone is on duty in the warehouse or stockroom full time, only one, or at most, two people should have access to the key.

One common mistake, when operating an unattended warehouse or stockroom, is to give a job superintendent a key and tell him to send a man down to pick up whatever equipment or supplies he may need. It would be an unusual superintendent who did not take more than he needed and an unusual truckdriver who did not see numerous articles for which he could find a good use or a ready market. Eventually there would be an unknown number of duplicate keys made and the contractor's inventory would be there for the taking by any dishonest employee who wanted to buy a key. Also, if such a policy had been in effect for any substantial period of time, the stock would usually be in such confusion that stolen items would never be missed. In correcting such a situation, the first step is to change the locks.

Thus far, little or nothing has been said about protection from the elements of materials and supplies stored off the job. Stockrooms and warehouses present no problem so long as the roof and windows are tight. Sometimes, in taking over a different warehouse, the roof and windows will be checked for leaks, but no attention will be paid to the possibility of the floor being wet. It is a point worth considering, particularly if cement, nails or any other materials or supplies that would be damaged by moisture are to be stored.

A contractor's yard sometimes includes a warehouse or shed. The outdoor portion would then be used to store the things which cannot be harmed by the weather. The yard should be protected by a wire mesh fence, at least seven feet high, and, depending on circumstances, the fence may be supplemented by a watchman service, floodlights, a burglar alarm, or all three.

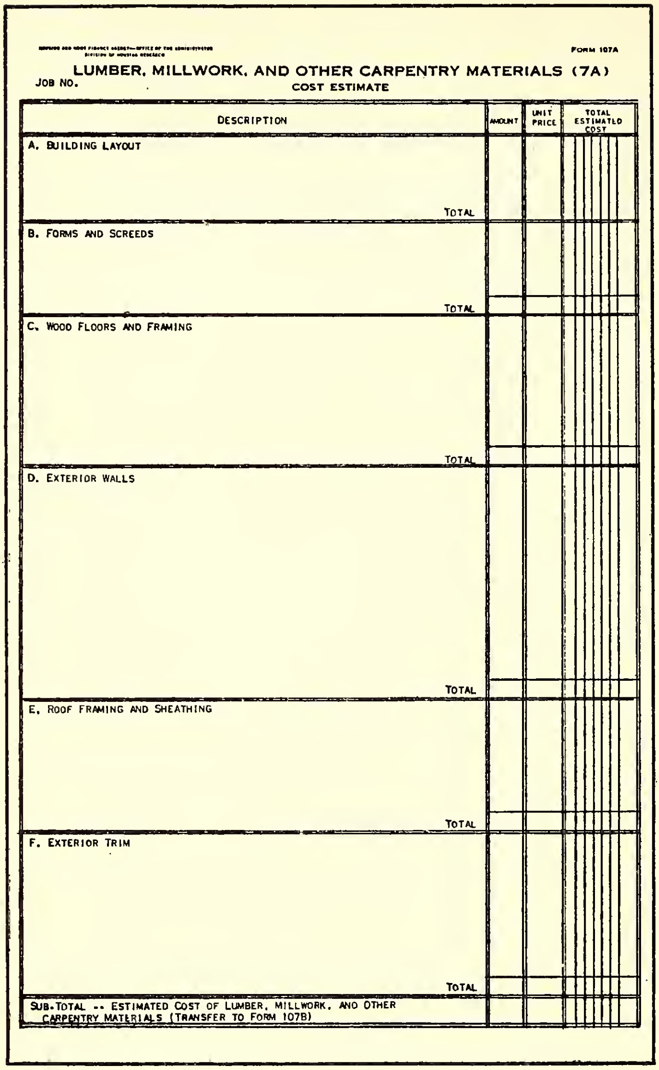
Control forms and procedures

The preceding pages have dealt with the purely physical aspects of controlling inventories of materials and supplies. But specific forms and procedures—paper work—are also important. The exact procedures described illustrate methods that have been used successfully. Naturally, they do not cover all possible situations. They do indicate how the problem may be approached, the tests for determining the effectiveness of any particular form or procedure, and how it may be modified to fit a wide variety of circumstances.

The materials budget: One of the best over-all checks on materials is the materials budget. Many contractors prepare a standard bill of materials (Fig. 9.2), a materials take-off, or some other detailed list of materials required for a particular project in order to "buy the job" at its inception. When such a list is drawn up, it is a simple matter to require that any further materials purchased or requisitioned for that project be specially authorized. Requests for further purchases, or additional requisitions on the warehouse are, of course, investigated and usually reveal weaknesses at some point in the procedure. Even if the jobs are not "bought" at their inception, the principle can still sometimes be applied if requirements are determined in advance of use.

There are two principal objections to the use of the materials budget. First, it is argued that it causes extra work when there are change orders. But if a control is useful it is worth a certain amount of additional work. Also the materials required by an additive change order, or for which credit must be given on a subtractive order, must be determined in negotiating the price, and hence any additional work would be negligible.

Second, it is argued that the cost of keeping a current record of



FORM 107A

LUMBER, MILLWORK, AND OTHER CARPENTRY MATERIALS (7A)

JOB NO.

COST ESTIMATE

DESCRIPTION	AMOUNT	UNIT PRICE	TOTAL ESTIMATED COST
A. BUILDING LAYOUT			
TOTAL			
B. FORMS AND SCREEDS			
TOTAL			
C. WOOD FLOORS AND FRAMING			
TOTAL			
D. EXTERIOR WALLS			
TOTAL			
E. ROOF FRAMING AND SHEATHING			
TOTAL			
F. EXTERIOR TRIM			
TOTAL			
SUB-TOTAL -- ESTIMATED COST OF LUMBER, MILLWORK, AND OTHER CARPENTRY MATERIALS (TRANSFER TO FORM 107B)			

Fig. 9.2 Materials list for lumber

This form is often used as a take-off sheet. If the material take-off has been prepared on working paper, this kind of sheet is used to summarize the materials required so that purchase orders may be written as needed. If a materials budget is used, one sheet of this type may be used for each kind of lumber included in the budget.

materials charges is excessive in relation to the benefits received. This argument is obviously not sound since the materials list, once made, constitutes the basic control. If a separate sheet of the general type (Fig. 9.2) is used for each kind of material to be controlled, it takes only seconds to reduce the balance on the sheet by the amounts of incoming deliveries.

Users of the materials budget point to some dramatic positive results. One West Coast tract builder, for example, has claimed that his materials budget led to elimination of losses equal to 9 per cent of his total material costs.

Purchasing forms and procedures: Purchasing policies, as noted above, may contribute heavily to the effectiveness of accounting for materials and supplies, by so scheduling deliveries as to minimize the need for physical storage and control at the job site. However, attempts to tie materials and supplies accounting to purchasing routines, as distinguished from purchasing policies, generally result in costly and time-consuming paper work, the results of which do not justify the cost.

There are three important exceptions to this general rule. The first exception is the practice of pricing purchase orders (Chap. 5). This routine provides valuable internal auditing data and is the most practical check on the pricing of invoices.

The second exception is the preparation of the job copy of purchase orders and purchase contracts. By sending a copy of every purchase order and purchase contract to the job superintendent as soon as the order is placed or the contract negotiated, it is possible to give the jobs notice of what has been bought and when and how it is to be delivered. If there is a delay of more than 24 hours between placing an order or negotiating a purchase contract and the preparation of the order form or contract document, a weakness exists and should be corrected.

The objection has been made that, in small operations where jobs are run by foremen, the purchasing information should not go to the foremen for two reasons: If deals with suppliers are known to foremen, confidential information may leak out to competitors or may be misused. Also, the foremen do not use the information anyway so it is a waste of time.

These objections will not stand up under analysis. The first can readily be overcome by omitting price information from the copies of the purchase orders and contracts sent to the job. The second, if true, constitutes an organizational weakness that should be corrected without delay.

The third exception is the printing of provisions on the purchase order. Every purchase order should prominently display a legend to this effect: "No back orders will be permitted. If any item on this order cannot be delivered delete it and notify us at once." Without such a provision in his purchase orders, a contractor may find himself forced to accept, and pay for, materials especially ordered by the supplier for some job, long after that job has been completed with materials purchased from some other supplier.

Receiving forms and procedures: Receiving procedures must vary with what is being received, where it is being received, and for what purpose. It is a matter of universal practice for the person making the delivery to obtain a signed delivery receipt. Often this signature is perfunctorily given without any examination of the shipment, thus constituting an open invitation for short deliveries as well as substituted, and sometimes unsatisfactory, products. A minimum receiving procedure practiced by soundly managed firms, however small, is to inspect every shipment before signing the delivery receipt. If possible, the quantity, quality, and condition of the items should be checked. If a receiving copy of the purchase order is available, it should be checked for items ordered but not delivered. Any attempts at back ordering should immediately be called to the attention of the person or department responsible for purchasing.

It is common, in modern shipping and billing systems, for the delivery receipt to be either a copy of the invoice or the invoice itself. If the person receiving the shipment has to sign the document, then it is a delivery receipt, regardless of the facts that it may be headed with the word "invoice" and that no other invoice may be given by the supplier. A single piece of paper may do double duty as both invoice and delivery receipt. Needless to say, if the contractor requires additional copies of the invoice they should be clearly marked "copy."

Many contractors, particularly those who do business in highly competitive trade areas, find it worthwhile to require the person receiving shipments to prepare his own count on a receiving report which later can be checked against the puchase order. If competition among suppliers is stiff, it is not unknown for them to bid for orders at cost or less and make up the loss of overhead and profit by shortening the loads or delivering inferior goods. Receiving documents are used to control payments in such a way as to combat any such practices (Chap. 13).

A typical minimum receiving procedure would involve these steps:

1. Unloading the materials or supplies at the job or warehouse
2. Counting them to see how many are there (or how much)

3. Inspecting them for condition and noting any damaged items
4. Checking the delivery receipt to see that the items signed for are the same as those received.

Other refinements such as receiving copies of purchase orders or separately prepared receiving memoranda may be required. Basically however, the steps will parallel those just given.

Receiving procedures for similar items will normally be the same whether delivery is at the job site or elsewhere. The required procedure should never be relaxed because deliveries are made to a job.

Warehouse or stockroom: Once materials or supplies are received at the warehouse or yard, the accounting records kept and the forms and procedures used (though they may vary widely to fit a wide variety of actual situations) should be such that the following questions can be answered at a moment's notice: (1) Have we got it? (2) How much (or many) do we have? (3) Where is it? (4) What condition is it in?

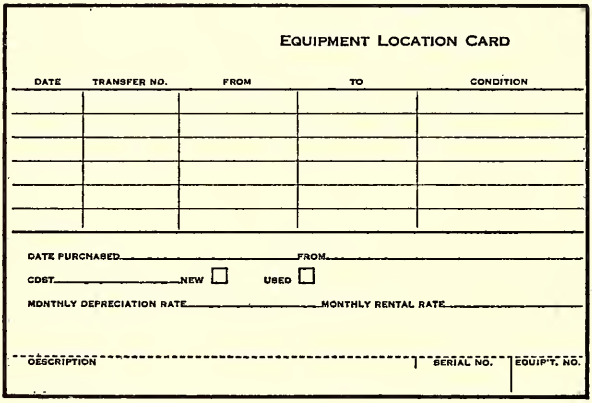
In a small warehouse, stockroom, or yard under the control of a full-time employee, or even a part-time employee, the warehouseman can usually answer these questions from memory. This method is adequate if the employee is available, or if the stock is small enough and well enough arranged so that anyone familiar with construction materials and supplies can answer the questions by going to the warehouse and inspecting the contents. Many small stockrooms and warehouses get along quite well with nothing more. As the number and variety of items increase, to the point where memory no longer serves the purpose, records become necessary. Often, when a construction company finds its warehouse becoming increasingly cluttered, and finds that it is purchasing articles which are already on hand in adequate supply, it is a sign the company has outgrown the memory stage and is in need of records.

For power or pneumatic hand tools and similar small, serially numbered equipment one of the most practical controls is a visible card record (Fig. 9.3). Remington Rand's Kardex is one of several simple, practical methods.

Frequently it is ueful to keep a central control file of this type for all small power and pneumatic tools, using one or more drawers for the tools on each job and separate drawers for the tools on hand in the warehouse. A similar card record (Chap. 10) is useful for equipment of all kinds.

The first step in keeping track of warehouse stock is to establish a permanent arrangement with marked bins or racks so that similar articles are always found in the same place. In this way anyone familiar with construction materials and supplies can tell at a glance whether a particular item is in stock and the approximate quantity on hand.

If the warehouse is kept in good order it is frequently unnecessary to carry physical accounting further. When the person or department which does the purchasing receives a requisition to purchase certain materials or supplies normally in warehouse stock, the warehouseman can usually tell which items are on hand. In very small operations, the buyer will simply go to the warehouse or stockroom and see for himself, if he does not already know.



EQUIPMENT LOCATION CARD

DATE	TRANSFER NO.	FROM	TO	CONDITION

DATE PURCHASED ____ FROM ____
COST ____ NEW ☐ USED ☐
MONTHLY DEPRECIATION RATE ____ MONTHLY RENTAL RATE ____

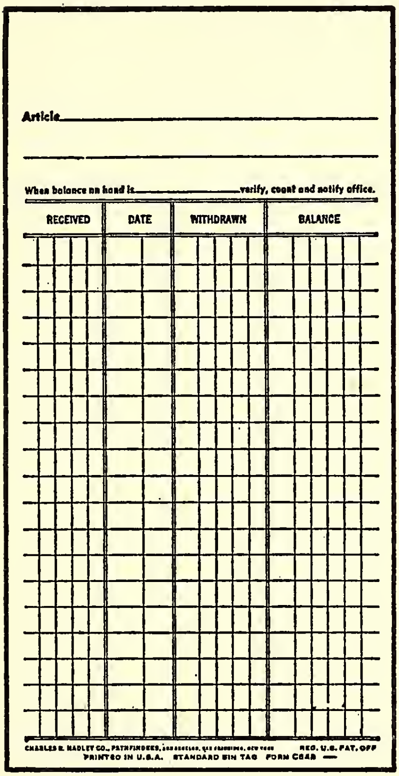
DESCRIPTION | SERIAL NO. | EQUIP'T. NO.

Fig. 9.3 Equipment location card

This card is used to control power or pneumatic hand tools and similar small equipment. One or two drawers in a cabinet usually suffice for the cards listing equipment used on any one job, and the cards on any additional items in the warehouse are kept in drawers reserved for warehouse stock. Thus it is possible, at a moment's notice, to tell what items are immediately available at the end of each job.

If jobs are large enough to have purchasing agents at the job site some companies supply them with monthly lists of materials, supplies, and equipment on hand in the central warehouse, in order to minimize delays in ordering and long-distance telephone calls from the jobs to the warehouse to learn what items are in stock.

As a device for physical control, perpetual inventories of stock in the warehouse (even those kept in term of units without reference to cost) are uncommon. Usually they represent an expenditure of time that could be more usefully spent elsewhere. If they are kept, the most practical method is to have an "in and out" type of card (Fig. 9.4) fastened to the front of the bin. Items removed are recorded in the "withdrawn" column and all items received are recorded in the "received" column. Each movement results in a new total carried forward. Other types of bin cards (Fig. 9.5) are available.

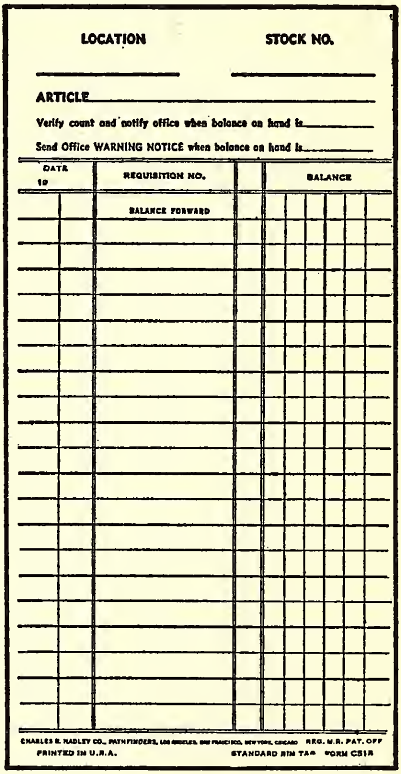


Article

When balance on hand is ______ verify, count and notify office.

RECEIVED	DATE	WITHDRAWN	BALANCE

CHARLES R. HADLEY CO., PATHFINDERS, [illegible], NEW YORK REG. U.S. PAT. OFF
PRINTED IN U.S.A. STANDARD BIN TAG FORM C84B



LOCATION STOCK NO.

ARTICLE

Verify count and notify office when balance on hand is

Send Office WARNING NOTICE when balance on hand is

DATE 19	REQUISITION NO.		BALANCE
	BALANCE FORWARD		

CHARLES R. HADLEY CO., PATHFINDERS, LOS ANGELES, SAN FRANCISCO, NEW YORK, CHICAGO REG. U.S. PAT. OFF
PRINTED IN U.S.A. STANDARD BIN TAG FORM C51B

Fig. 9.4 "In and out" bin card

Fig. 9.5 Inventory bin card

Additions or deductions can be made in the balance column, or the adjusted balance can merely be carried forward.

Variations: The physical control thus far discussed is intensely practical. It is elusive in the sense that no single practical, uniform system to secure and maintain it on construction jobs ever has been or ever will be devised. The materials, the job conditions, the kind and amount of equipment, the personnel, and the nature and location of the jobs are but a few of the variables that make physical control of materials and supplies a problem to be solved on the basis of experienced judgment applied to individual facts, rather than by any preconceived system of procedures. That a system has worked well on one job is no guarantee that it will work well on the next job. In fact, one of the strongest features in a program of physical control over materials and supplies is flexibility and variation. When the routine becomes too well established, someone will find a way to beat it.

It must be repeated for emphasis, however, that the extreme variability in the forms and procedures required for adequate controls on materials and supplies cannot, under any circumstances, justify failure to establish standard procedure. A company may, within the scope of its normal operation, establish those forms and procedures best calculated to meet its individual problems. However, once such forms and procedures are established it cannot stop there. The system itself must be flexible enough to permit wide variations and it must be subjected to constant review to gauge its effectiveness under prevailing conditions. Failure to follow this process of constant reassessment has caused more breakdowns in materials and supplies accounting than any other single factor.

On the other hand, flexible as the detailed procedures for physical control of materials and supplies may be, the objectives never change. These may be summarized as follows:

1. When you receive a shipment, make sure you are getting what you ordered, and that it is all there and in good condition.

2. After you have received it, be sure you know where you put it and that it is as well protected physically from loss, damage, or theft as is reasonably possible in the circumstances.

3. Whether it is delivered directly to the job for immediate use, or is stored in a yard, warehouse, or stockroom, be sure you have a written record of who is getting it and for what, before you release it. You signed for it when you got it. The person to whom you deliver it should do the same. He should also tell in writing what he expects to use it for, and if the question is applicable, the source of his authority to request its delivery to him.

These steps sound simple and they are. The only complications are those that arise when no one takes the trouble to see that the steps are taken.

Accounting for direct charges

In its most rudimentary form, accounting for materials and supplies follows these steps:

1. The foreman on the job (who is often the contractor) orders whatever he needs for the job from his suppliers. He may use a materials take-off and from it write a purchase order, but often he will simply take the plans in to the materials dealer and make out his order with the help of a salesman.

2. When the materials arrive on the job, the foreman, or someone designated by him, shows the driver where to unload. He may or may not save the consignee's copy of the delivery receipt.

3. When the material dealer's statement comes in at the end of the month, the contractor pays it and charges the amount to material cost on the books.

So long as everyone is honest and accurate and no one wants to know the cost of any particular job, there is nothing wrong with such a system. Unfortunately, life is not that simple. Some people are dishonest; everyone makes mistakes occasionally; and in the construction business it is usually necessary, for one reason or another, to know the cost of each job. Be that as it may, there are hundreds, possibly thousands of small contractors who account for their materials and supplies in about the way the three steps above indicate.

The better (and more successful) contractors—even the very smallest—usually add several more steps to the procedure. They prepare their own material list and put it on one or more purchase orders to the supplier. They keep copies of their purchase orders and drop them into a folder labeled with the job name and number. They then see that the loads of materials are checked in on the job, and that each load is separately billed showing the address of the job to which it is delivered. They save the delivery receipts and place them, together with the purchase orders and the invoices, in the job folder.

Every ten days, or before the tenth of each month, depending on how the discount dates fall, the invoices, the delivery receipts, and the purchase orders are matched up. Items shown on the invoice or the purchase order, but not on the delivery receipt, are deleted, and a separate check is written to cover the items purchased and actually received on each job. If the disbursements record is properly arranged, only one check need be written to each supplier even though his deliveries covered more than one job. Thus, almost automatically, the jobs are charged with the materials and supplies that are delivered to them, and unless management wants costs for the several work items into which the jobs are usually broken down on the specifications, the accounting for materials and supplies is completed.

In the operations of smaller construction companies, if a job is carefully bought there will be very little salvage and what there is can usually be returned for credit or transferred at salvage price (or more often at no price at all) to another job. Only a few power hand tools are kept in stock and these the contractor knows from memory. However, as the size of the operation increases, so do the number and variety of items and at some point accounting controls become necessary.

The system just described is used with great success by many contractors—even the smallest. Basically, the same system, expanded in some particulars because of larger volume, is used by most of the largest contractors regardless of whether materials and supplies are bought directly for the job or are passed through a warehouse, yard, or stockroom inventory account. Many of the larger jobs have separate sets of books (particularly if a job is being done by a joint venture) and some have extensive cost breakdowns. However, there are numerous multimillion dollar jobs on which only a single account is kept for materials and supplies. The final test in determining the system to be used is the end use of the figures. There is no merit in paying for records that will not be used.

Those contractors who use cost data from one job as a guide in bidding other jobs frequently break their jobs down according to work items, which constitute a basis for compiling unit costs (Chap. 4). Thus a building contractor might have a cost account for "wall forms" and compute a cost per square foot. A tract housing builder, on the other hand, might have a cost account called "cupboards and cabinets" and compute a unit cost for each house of a particular design. In such cases the "materials" account in the general ledger becomes a controlling account for the "materials" column in the cost ledger (Chap. 15). The only difference in accounting treatment would be in coding the charge to the cost account as well as to the general ledger (Chap. 13).

The essence of any system of cost accounting for materials and supplies is coding—the accounting term used to describe the job of placing on each invoice, purchase order, requisition, or other original document, the number of the general ledger and the cost ledger accounts to be affected by the transaction. Thus, in the voucher system flow chart (Fig. 9.6), it will be noted that the voucher is coded so that account 145 in the general ledger is debited and account 205 is credited. In the cost ledger, account Z–2–27 is charged, which would normally mean that the "materials" column in the cost ledger sheets for Job Z is designated as column 2 and that the materials were used on work item number 27—this work item having its own separate sheet in the cost ledger. Of course, in a system without cost accounts, the charge would simply be applied to Job Z.

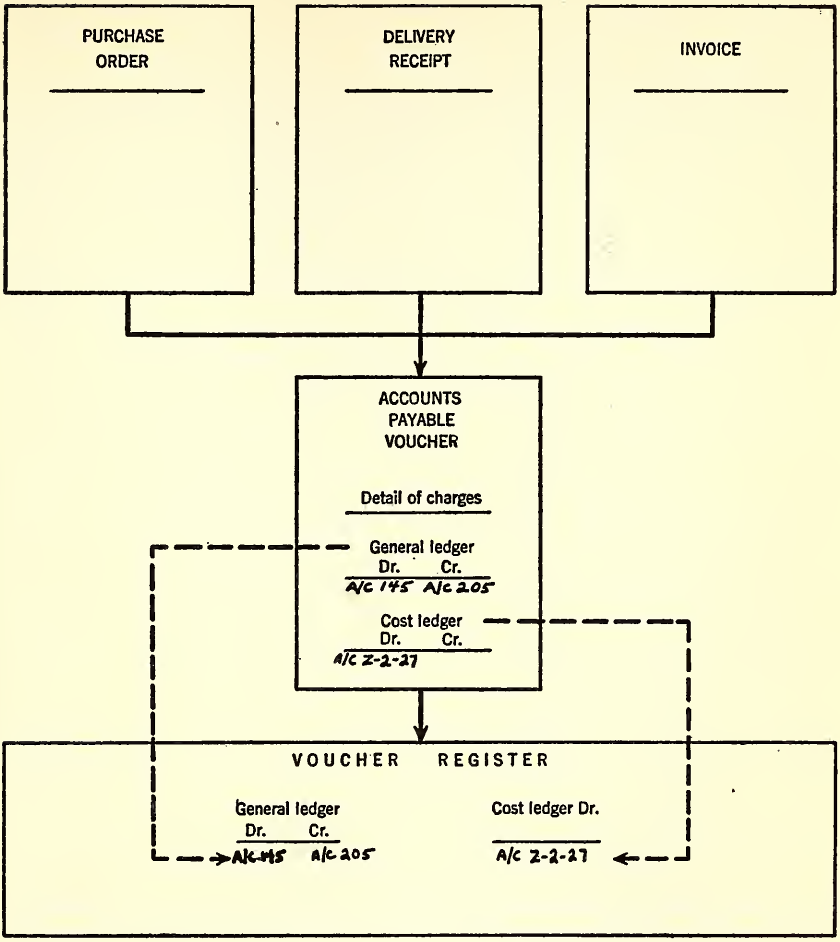


Fig. 9.6 Voucher system flow chart

Three basic documents—purchase order, delivery receipt, and invoice—support a voucher. The information in these documents is summarized on the voucher and is posted from the voucher to the books of original entry.

The best method of coding materials and supplies that are to be charged directly to a job is to code the purchase order; no one knows better than the person placing the order the purpose for which the material is being bought. If coding the purchase orders is not feasible, it is usually necessary to code the invoices. Ordinarily invoice coding has to be done by a foreman, superintendent, or cost engineer who is familiar with the job and who knows where the invoiced materials were used.

The most rudimentary accounting system maintains a simple unpaid bills file which the owner checks at regular intervals to determine what bills are to be paid. Under such a system, materials and supplies are accounted for only when the bills are paid and no formal account is taken of unpaid items. This method may be converted to an accrual method at the end of an accounting period by entering all unpaid items through the general journal and reversing the entry after the new period begins. This method is used on many construction jobs (even some very large ones) where separate books are kept on the job, and where interim financial statements are not important.

A better procedure for construction companies, either large or small, is the voucher system, and its use will be assumed in further discussions and illustrations. Some contractors still keep an accounts payable ledger, either because they use it for reciprocity information or because a voucher system becomes unwieldy when bills are not being paid currently. Nevertheless, there are many contractors, particularly small ones, who distribute costs on a cash basis and only record liabilities at the end of an accounting period. The flow chart illustrated (Fig. 9.6) shows a typical voucher and, in illustrating the voucher system, it follows a single transaction from the purchase order to entry in the records. It also demonstrates one method (probably the most common) of getting cost data from the original documents into the general and cost records. This procedure is discussed in greater detail in Chap. 13.

Various procedures may be used under the voucher system. First, the material may be charged directly to the job and not to a warehouse account. Second, costs may be recorded net of discount. The first is standard procedure and should be followed whenever the facts permit. The second is a matter of accounting judgment. If the amount of discount earned is important to management, then discounts should not be netted. If management has no need for the discount figures, then the handling should be as illustrated. In reaching a decision on this point, the extent, if any, to which material cost figures are used in bidding may be significant.

When distribution is made only at time of payment, a cash disdisbursement record is ordinarily used instead of a voucher register.

If a blanket purchase order is used, or if more than one delivery is made on one order, the order is marked to show the items received and the voucher number on which they appear and is kept in the file under the supplier's name for the remainder of the deliveries. If these are delayed too long back orders must be suspected.

One important variation of the procedure illustrated in the flow chart arises when all, or substantially all, of a particular type of material (framing lumber, for example) is bought at one time, as in the construction of tract housing. If no cost ledger is kept, the charge would, of course, be simply to materials. If, on the other hand, costs are kept on each unit, the lump sum purchase must be prorated to the several cost accounts on the basis of the original materials take-off. If more of the same type of materials is required toward the end of the job, that cost, too, must be prorated over all units even though some may be finished. Such additional purchases usually mean errors in take-off or buying or that there has been loss or waste of materials.

Accounting for items out of inventories

Basically, there is no difference between accounting for materials and supplies taken from stock, and accounting for those that are bought. It has been pointed out that nothing should leave the warehouse or stockroom without written authorization, whether in the form of a materials list (Fig. 9.2), a material order (Fig. 9.7, 9.8), a storeroom requisition (Fig. 9.9, 9.10), or a copy of a direct billing made on a counter billing machine (Fig. 9.11). All of these forms are, in effect, requisitions, and are referred to as such for convenience.

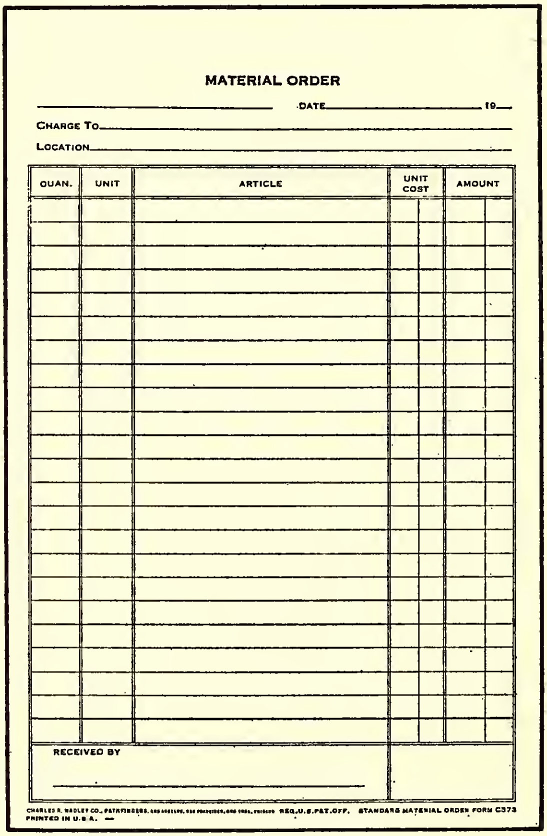
The requisition is the basic document for stockroom or warehouse accounting. The first copy, which should be signed by the foreman, or someone designated by him, takes the place of the purchase order. The copy signed by the person receiving the order is comparable to the delivery receipt. The second copy, which goes directly to the bookkeeping department and is priced, extended, and often costed by the bookkeeper, takes the place of the vendor's invoice. Instead of supporting an accounts payable voucher (Fig. 9.6), these may be summarized in a warehouse disbursement record from which postings are made to a general ledger and the cost ledger, or they may be summarized on work paper, and the work paper used to support a journal voucher. A journal voucher form for general journal entries is preferable to the usual general journal form (Chap. 17).

When materials or supplies are sold from the warehouse, the procedure for charging out is much the same as when they are used on a job, if actual cost is known or estimated, or if warehouse stocks are priced out at market.

To illustrate, if cost is known, and is to be accounted for currently, the entries in the sales record will be as follows:

Dr. Cash (or Accounts receivable) for selling price
  Cr. Warehouse sales for selling price
Dr. Cost of warehouse sales for actual cost
  Cr. Warehouse inventories for actual cost

If the cost is not known, but is estimated, the procedure is the same, except that at the end of the fiscal year an inventory will be taken



MATERIAL ORDER

____________ DATE ____________ 19__

CHARGE TO ________________________

LOCATION ________________________

QUAN.	UNIT	ARTICLE	UNIT COST		AMOUNT	

RECEIVED BY ________________________

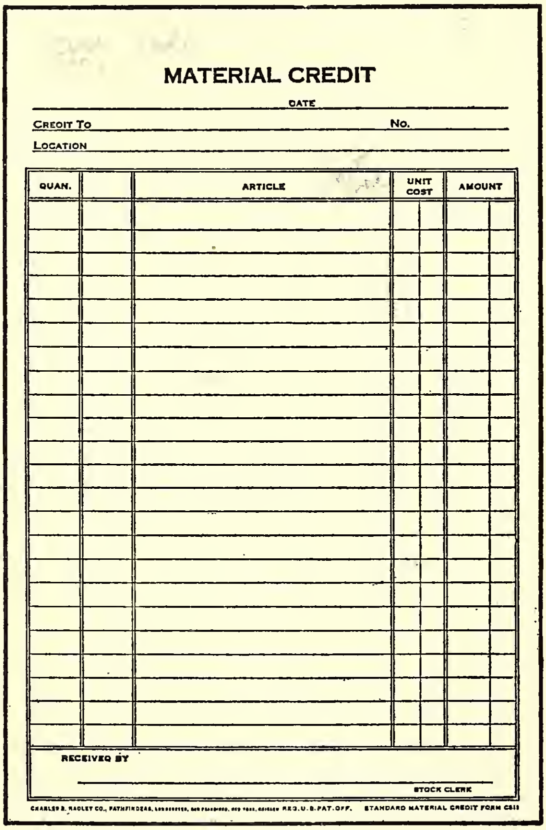
CHARLES R. HADLEY CO., PATHFINDERS, [illegible] REG. U.S. PAT. OFF. STANDARD MATERIAL ORDER FORM C373
PRINTED IN U.S.A.

Fig. 9.7 Material order

This form and the one shown in Fig. 9.8 are frequently used to authorize deliveries from, and returns to, the stockroom or warehouse. They may be made in as many copies as the accounting needs of the business dictate.

and the overage or shortage will be adjusted by charging or crediting a "Warehouse inventory adjustment" account (or "Materials cost" if no detailed job costs are kept), as follows:

Dr. Inventory adjustment account (or Materials cost) for amount of shortage
    Cr. Inventory for amount of shortage



MATERIAL CREDIT

DATE

CREDIT TO No.

LOCATION

QUAN.		ARTICLE	UNIT COST	AMOUNT

RECEIVED BY

STOCK CLERK

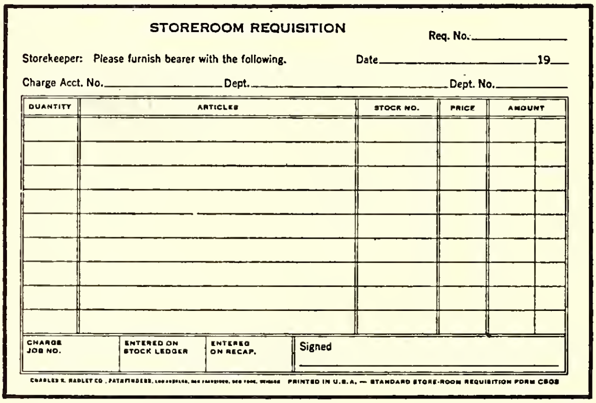
CHARLES R. HADLEY CO., PATHFINDERS, ... REG. U. S. PAT. OFF. STANDARD MATERIAL CREDIT FORM C515

Fig. 9.8 Material credit

Many contractors who carry substantial inventories (plumbers, electricians, and so on) cost their warehouse sales and warehouse requisitions from a current catalog. This is substantially the same as estimating cost and the procedure followed is the same.

If, as is often the case, the warehouse is operated as if it were a separate business, the cost of sales would be found by taking inventory once each year and using the formula (beginning inventory plus purchases less ending inventory) to determine cost of warehouse sales. Cost of sales on interim statements would, in a system of this kind, be estimated as a percentage of sales or estimated from the supplier's catalog as described above.

It will be noted that a separate account called "Warehouse sales" is used. Under normal circumstances any additional cost incurred in keeping such an account is far outweighed by its usefulness when tax returns are to be prepared.



STOREROOM REQUISITION

Req. No.________

Storekeeper: Please furnish bearer with the following. Date________19__

Charge Acct. No.________ Dept.________ Dept. No.________

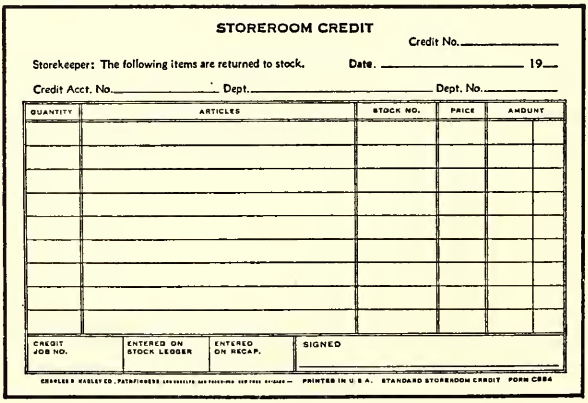
QUANTITY	ARTICLES	STOCK NO.	PRICE	AMOUNT	

CHARGE JOB NO.	ENTERED ON STOCK LEDGER	ENTERED ON RECAP.	Signed

CHARLES R. HADLEY CO., PATHFINDERS, LOS ANGELES, SAN FRANCISCO, NEW YORK, CHICAGO PRINTED IN U.S.A. — STANDARD STORE-ROOM REQUISITION FORM C808

Fig. 9.9 Storeroom requisition

This form and the one shown in Fig. 9.10 are similar in use to the material order and credit.



STOREROOM CREDIT

Credit No.________

Storekeeper: The following items are returned to stock. Date.________19__

Credit Acct. No.________ Dept.________ Dept. No.________

QUANTITY	ARTICLES	STOCK NO.	PRICE	AMOUNT	

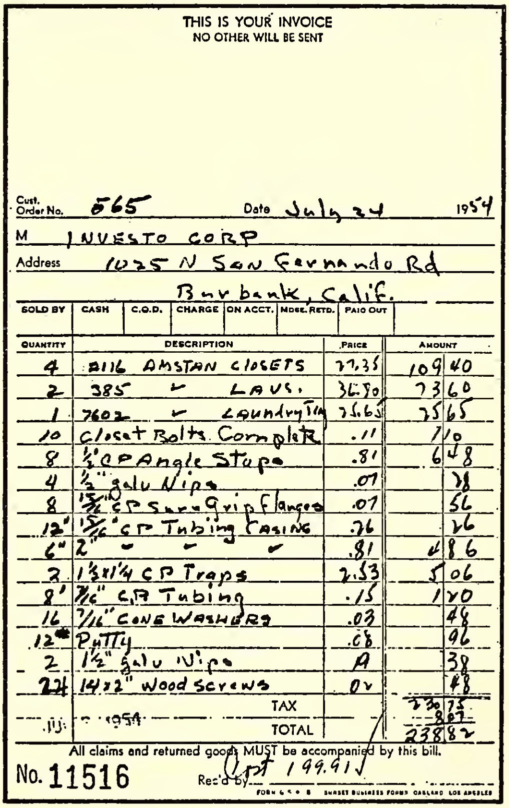
CREDIT JOB NO.	ENTERED ON STOCK LEDGER	ENTERED ON RECAP.	SIGNED

CHARLES R. HADLEY CO., PATHFINDERS, LOS ANGELES, SAN FRANCISCO, NEW YORK, CHICAGO — PRINTED IN U.S.A. STANDARD STOREROOM CREDIT FORM C884

Fig. 9.10 Storeroom credit

There are a number of special problems which arise in working with inventories of materials and supplies in yard, warehouse or stockroom. The most universal of these are pricing and costing.

Theoretically, there are three general methods of costing out materials and supplies taken from inventory: (1) First-in-first-out (FIFO), (2) Last-in-first-out (LIFO), (3) Average cost.



THIS IS YOUR INVOICE
NO OTHER WILL BE SENT

Cust. Order No. 565 Date July 24 1954

M INVESTO CORP

Address 1025 N San Fernando Rd
Burbank, Calif.

SOLD BY	CASH	C.O.D.	CHARGE	ON ACCT.	MDSE. RETD.	PAID OUT

QUANTITY	DESCRIPTION	PRICE	AMOUNT	
4	2116 AMSTAN CLOSETS	27.35	109	40
2	385 〃 LAVS.	36.80	73	60
1	7602 〃 LAUNDRY TRA	75.65	75	65
10	Closet Bolts Complete	.11	1	10
8	½" CP Angle Stops	.81	6	48
4	½" galv Nips	.07		28
8	15/16" CP Sure Grip Flanges	.07		56
12"	15/16" CP Tubing CASING	.26		26
6"	2" 〃 〃 〃	.81	4	86
2	1½x1¼ CP Traps	2.53	5	06
8'	7/16" C.P. Tubing	.15	1	20
16	7/16" CONE WASHERS	.03		48
12#	Putty	.08		96
2	1½" galv Nips	.19		38
24	14x2" Wood screws	.02		48
			230	75
	TAX		8	07
JU 1954	TOTAL		238	82

All claims and returned goods MUST be accompanied by this bill.

No. 11516 Rec'd by Cost 199.91 ✓

FORM 6 5 4 8 SUNSET BUSINESS FORMS OAKLAND LOS ANGELES

Fig. 9.11 Billing form

This is the second (accounting department) copy of a form used by a small local plumbing contractor. When materials are taken from stock they are recorded on a hand-operated billing machine on the stockroom counter. Four copies are made. The first is the customer's copy of the invoice. The second is sent to the bookkeeper and serves as the office copy of the customer's billing. The third copy is the cost copy. The fourth copy remains in the machine as a chronological record.

Practically the use of these methods is rare because they cost too much to operate and, particularly with used items, are too inaccurate. Many warehouses and stockrooms are operated as if they were separate businesses. The warehouse is charged with the cost of materials and supplies purchased for stock or brought into stock as salvage, and, in turn, "sells" them to the jobs. The so-called "profit" from the warehouse offsets the overhead. This method distributes the cost of operating the stockroom or warehouse among the jobs on a roughly proportionate basis. The prices charged to the jobs closely approximate the going market for the items supplied.

This method has an additional advantage when a contractor takes some jobs on a lump sum bid, others on a unit price basis, and still others on a time-and-materials or cost-plus basis. So long as the price charged to the job for material is not greater than the price the contractor would pay some outsider for the same items, no one has grounds for complaint. The contractor, on the other hand, has a system which works the same way for all jobs and effectively distributes the cost of operating the warehouse or stockroom to the jobs. The system costs less to operate because current market value is quickly and simply determined, whereas any kind of pricing based on cost means additional work and expense.

For income tax purposes, it is usually necessary to take some sort of physical inventory regardless of the method of handling the warehouse or stockroom. New stock is customarily priced, for inventory purposes, according to the most recent invoices, in keeping with traditional first-in-first-out accounting. Used materials or supplies are usually priced either at market, less an estimated cost to recondition, or at an estimated 40 or 50 per cent of current market. Consistently followed, such a method is rarely questioned when used for income tax reporting purposes because, when properly applied, it results in a realistic valuation of warehouse stock and a substantially correct determination of income.

Similar problems arise with minor equipment. When not bought directly for the job, hand tools, parts, and supplies are normally "sold" to the jobs from the warehouse, as described above. Power concrete buggies, table saws, power hand saws and drills, pneumatic tools, and similar equipment may also be "sold" to the job and then "repurchased" at the end of the job at going rates. When these items are "sold" the prices are usually at or near the market price for the "sale" and normally range from 20 to 50 per cent of market for the repurchase, to allow for handling and reconditioning. Market, here, is what the contractor would have to pay if he bought the item from someone else. When this procedure is followed, the repurchase at a reduced price is often used instead of a formal depreciation charge on minor equipment. Even when the "sale" system is used, these items should be charged to the job and accounted for. The visible index (Kardex) files are usually adequate for this purpose and constitute, in effect, a perpetual inventory of minor equipment. When such items are rented to a cost-plus job, it is usually necessary to stop the rentals when an amount equal to 80 per cent of the going market price has been charged on any piece of equipment, or—as for form ties, whaler braces, shores, and so on—when the rentals reach about 80 per cent of the cost of that class of equipment on the job.

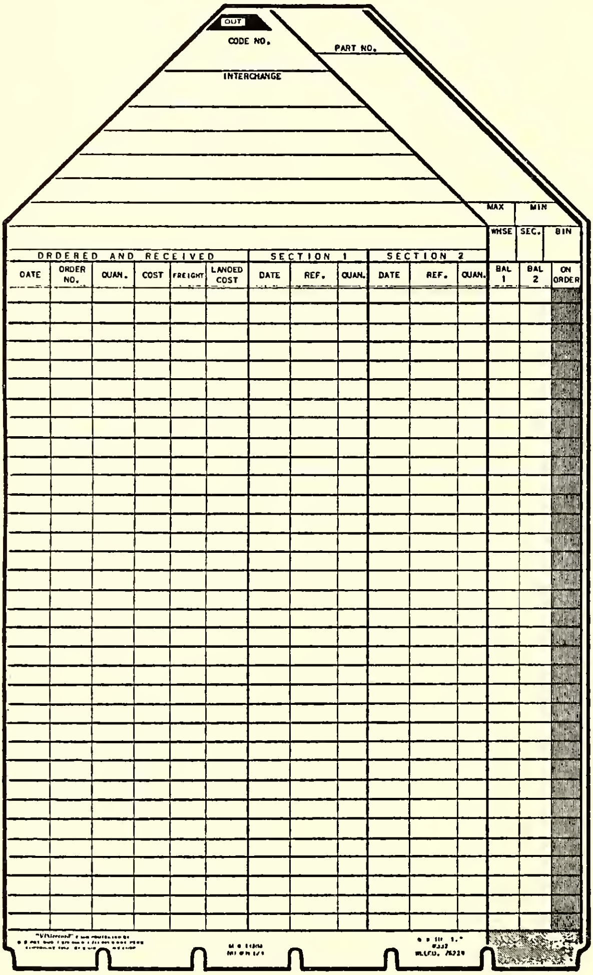
If power and pneumatic hand tools are rented to the jobs it is common practice to keep the control and central depreciation records on the cards, although these records are sometimes kept in an equipment ledger. In most cases the card file alone is less costly and just as effective as control cards used in conjunction with an equipment ledger. The determining factors in selecting the system to be used usually are the location of the warehouse and the personnel used to run it.

One factor strongly favoring the "selling" of small tools and supplies and the "renting" of power and pneumatic tools to the job is the psychological effect on foremen and superintendents. Such men are almost invariably cost-minded and will return unused equipment or supplies for credit rather than allow them to remain idle at the job site and increase the costs charged to their jobs.

Perpetual inventory, as an accounting device, is frequently too costly to be practical when applied to construction materials or supplies. When such perpetual inventories are required on certain types of cost-plus-fixed-fee jobs, as they sometimes are, the forms and procedures are almost always prescribed beforehand. On ordinary commercial work the test is usually one of volume. The bin type of perpetual inventory card (Fig. 9.4, 9.5) is practical for smaller warehouses. Also shown is a more complicated card (Fig. 9.12) used by one of the largest construction firms in the country. Notice that while data on costs, including freight and handling, are provided for on this card, the inventory itself is kept in units only.

If tabulation equipment is available, and the volume of transactions is very large, perpetual inventories in terms of quantity and value can be used successfully. However, they are usually kept in terms of units only and the value is either ignored entirely or is limited to unit price figures.

If a detailed quantity control is required and the volume of transactions is so large that it makes sorting and grouping of data a problem, a modified form of punched card accounting may be useful. In this system the only equipment needed is a hand punch and a sorting needle. One such system is marketed by the McBee Company under the name of Keysort. Another is marketed by the Charles R. Hadley Company under the name of Unisort. A Unisort stock card



OUT

CODE NO.

PART NO.

INTERCHANGE

MAX	MIN	
WHSE	SEC.	BIN

ORDERED AND RECEIVED						SECTION 1			SECTION 2					
DATE	ORDER NO.	QUAN.	COST	FREIGHT	LANDED COST	DATE	REF.	QUAN.	DATE	REF.	QUAN.	BAL 1	BAL 2	ON ORDER

Fig. 9.12 Perpetual inventory card

This card is used by one of the largest construction companies in the United States. It is reported to be very accurate and a great timesaver if volume is heavy.

designed to fit the stock control needs of one plumbing and heating contractor is shown in Fig. 9.13. This card provides for unit prices but does not attempt a running cash value account.

If a large volume of materials and supplies is disbursed from a warehouse or stockroom, the requisition can be prepared on cards designed to be used with one of these modified punched card methods.

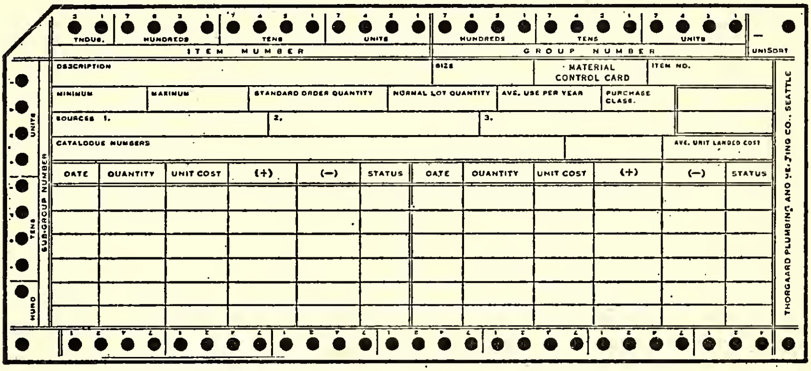


Fig. 9.13 Unisort punch card

If classification of data is a problem and the volume to be processed does not justify the cost of machine sorting equipment, this type of punched card can often be used to good advantage. A hand punch and a sorting needle are the only equipment required. Electrically driven punches are available. Any clerk can be trained to use this type of card in a very short time.

If perpetual inventories are kept, whether in terms of money or units, or both, the problem of physical inventories can be greatly reduced by taking them for a portion of the warehouse or stockroom each month and adjusting the cards to show the actual quantities on hand, with corresponding general ledger adjustments of the total inventory value. An even more common method is to count any particular bin whenever the quantity is low.

Regardless of the type of accounting controls used, a physical inventory of materials and supplies including spare parts, hand tools, pneumatic tools, and power tools, should be taken at least once a year in the general warehouse or stockroom if the amount on hand is substantial. If jobs are large enough to have their own warehouses, repair shops, or stockrooms, it may or may not be practical to take a physical inventory, depending on the length of the job, the quantities on hand, and the degree of physical control exercised.

Physical inventories should be taken on forms prepared and provided by the general office so that terminology will be uniform and proper designations and descriptions used. Because most contractors have both new and used materials, supplies, and equipment on hand, it is important that the forms provide space to indicate condition (new or used, and serviceability) of each item.

One fairly common method of taking physical inventory is to have the warehouseman or (if none is employed) the person making the count tag the bins and piles and to have some other person list the tags and make test counts. When this method is used, the tags should be prenumbered so that a positive check may be made to be sure that no tags have been missed. If withdrawals are necessary during the count, or if items of the same kind are stored in more than one place, this information can be marked on the tags and taken into account when the tags are summarized.

Many contractors will object strenuously to a physical inventory of warehouse and storeroom, because most of the contents have been charged to the cost of jobs, and the setting up of an inventory on the books would require payment of income tax on an amount equal to the cash value of the inventory. If the practice has been followed for a number of years, and if there is no substantial change in warehouse stock from year to year, there would seem to be no serious distortion of income and under present income tax laws no harm is likely to be done. However, if inspection indicates a trend toward substantial increase, it may mean overbuying and tying up working capital to such an extent that it would be cheaper to pay the tax. It may also mean the contractor is paying for the storage and handling of worthless junk which should be scrapped.

One final admonition about physical inventories: If the stuff is worth keeping it is worth listing even though it may be assigned no value. If it is not worth listing, it probably should be sold for scrap.

Prevention of theft

A system has yet to be devised which will completely insure against theft of materials, supplies, and small tools from construction jobs. Job site conditions usually make complete physical protection so difficult and sometimes so costly that certain risks are justified. These problems have already been discussed, as have the normal accounting procedures designed to develop records of accountability from the time an item is ordered until it is used or consumed on the job. Inevitably, such accountability procedures must be designed with the possibilities of fraud and theft in mind. We turn now to the consideration of methods used by dishonest employees and the extent, if any, to which accounting records may be expected to help control losses of this kind as well as the ways in which they may be used for that purpose.

At the outset, it should be understood that no accounting system can prevent a dishonest warehouseman from stealing nails, screws, fittings, small tools, and similar small items. It may eventually disclose the shortage, and even point to the culprit, but the system alone cannot prevent him from stealing in the first place. Moreover, the economic limit to accounting controls is the point at which their cost exceeds the amount which may be saved by maintaining them.

Bonding is an effective psychological preventive against major thefts and all employees responsible for materials and supplies should be bonded. Bonding, however, is not strictly an accounting device.

One of the most effective over-all accounting controls is the materials budget, which has been discussed previously. This control forces the job superintendent or foreman to justify any requests for purchases in excess of the budget and will cause him to be alert to the possibilities of job site losses. However, the method also leads to attempts on the part of superintendents to disguise the purchase of items on which the budget is exhausted by having suppliers bill them as other items, for which an adequate budget has been established, or for which there is no budget and hence no basis for control.

When purchasing and payment are handled from the general office, it is usually possible to detect this practice at the time the receiving tickets are matched up with the invoices and purchase orders. There is comparatively less incentive for a supplier to conspire with the superintendent when purchases are made from the general office, and almost none at all when irregularities might delay payment. If, however, purchasing and payment are handled at a job office, the only effective check on misrepresentation of purchases by the superintendent is an effective field audit procedure that includes thorough physical checks on receiving routines made at irregular intervals, and is followed by tracing back individual shipments to the purchases and then tracing the same shipments forward into the accounts.

When purchases are delivered directly to the job site, and charged directly to costs, it is common for dishonest employees to have some of the incoming loads of materials diverted to a site where personal construction projects are in progress or to other contractors' jobs where the goods have been sold at bargain prices. In the absence of collusion between the supplier, or his truck driver, and the job superintendent, it is fairly simple to discover this type of theft by instructing the voucher clerk to notice the point of delivery on the delivery ticket and to exclude from the payment any invoices covering shipments not delivered to the job site. The ensuing demand by the supplier for payment will usually bring to light any improper diversions of shipments. If there is collusion, the detailed check-in at irregular intervals, followed by detailed tracing of individual items, will usually provide the best means of discovering misdeliveries as well as most other types of dishonesty at the receiving point. Even forged delivery receipts may be caught by an alert auditor.

A materials budget will disclose diversions of deliveries, but rarely soon enough to be very helpful. If the superintendent is gone, and the structure built from stolen materials has been sold to a bona fide purchaser, the only recourse is to the employee, or the bonding company if he is bonded.

Although surprise audits of incoming shipments will discourage fraud or theft at the delivery point, they will have little effect on violations of the procedures for charging out materials and supplies from warehouse stock. The simplest method of stealing stores from a warehouse or stockroom, and the one least likely to be detected, is to take them out without making any record. Therefore, regardless of the charge out method in effect, there must be some document, originating at the time of withdrawal, which shows what is withdrawn by whom. Careful inspection of these documents alone can be an important deterrent to theft, particularly when coupled with an accurate knowledge of the warehouse stock.

If there is no one in charge, or if a number of people have access to the stockroom or warehouse, there is no way to allot responsibility for materials or supplies removed without a record. If one person is in charge, any theft that might occur must be with his acquiescence or through his negligence. In any event, if the goods leave the warehouse without a charge, the shortage is thrown into the inventory where it will not usually show up until the next physical count.

One of the best ways of avoiding a failure (either negligent or intentional) to prepare a charge slip when withdrawing stock from warehouse or stockroom, is to have the requisition signed and coded by the person who wants the item withdrawn, and to have a copy of the requisition go directly to the accounting department where it is ultimately matched with the slip on which the person receiving the goods had signed. Absence of this control is the most serious weakness of the system illustrated in Fig. 9.11 of this chapter. Figures 9.9 and 9.10 illustrate forms designed for this type of use and the forms in Fig. 9.7 and 9.8 could easily be redesigned to permit it. The comparable control for purchases that are to be charged directly would be a purchase requisition which can, as a rule, be a duplicated copy of the material take-off sheets for the job, or in standardized structures like tract houses, the standard materials list. A similar result can be obtained by having the purchase orders reviewed and signed by one of the principals or by some person in a position to know what materials and supplies are needed but with no direct contact with the suppliers or their truck drivers.

Such procedures do not prevent someone, totally unauthorized, from backing his truck up to the loading dock and, with the cooperation or acquiescence of the person in charge of the warehouse, loading it up and driving off with company property. Nor does it prevent the taking, by authorized persons, of items not included on the requisition. Surprise auditing may disclose such activity if the auditor arrives about the time a loaded truck is ready to leave and then checks the load against the documents. Another way to discover shortages is to spotcheck certain items. The auditor (public or internal) selects a single item (such as claw hammers, picks, steel tapes, aluminum or copper tubing) that might be particularly subject to misappropriation; checks all movements in and out to arrive at a theoretical inventory in terms of units; and compares the result with a physical count. This procedure, of course, is only useful when one person is responsible for the warehouse or stockroom.

The most effective deterrent to theft from a stockroom or warehouse is not an ironclad accounting system but rather a belief on the part of employees that if they steal they will be caught. Some of the more successful methods of inducing such a belief include: (1) A resourceful internal auditor making surprise checks at irregular intervals, (2) Bonding of employees with access to the warehouse, (3) Insistence on careful record keeping, (4) Some practical system of checking persons and vehicles leaving the warehouse or the job site.

The last is very difficult because, if injudiciously done, searching vehicles or individuals can lead to lawsuits, union intervention, and sometimes even criminal charges against the contractor. Although it has nothing to do with accounting, it might be pointed out that if the employees' parking area is as far as possible from the warehouse, the chance of an employee carrying off any substantial amount of materials, supplies, or equipment without detection is minimized.

Employees often walk off the job with small tools issued to them.

If a "brass" system (Chap. 8) is being used, the brass can be used a a tool check. However, it is often equally satisfactory to make the foreman responsible for tools issued to his crew.

On government jobs where there is some form of security patrol, it is often possible to obtain the cooperation of the security officer for physical inspections of outgoing automobiles and personnel.

Many old-time construction men ridicule accounting methods as a means of controlling theft of materials and supplies from the jobs or from a central warehouse. Usually such ridicule is accompanied by tall tales of brazen stealing. However, when these stories are traced to the source it will almost always be found that one indispensable ingredient was missing from the system—alert management. An accounting system, like a shovel, never works by itself. Someone who knows men, materials, and construction must be constantly alert for "on the spot" conditions that can open the door to laxity, error, or dishonesty. Given that kind of supervision, almost any accounting system, reasonably tailored to the circumstances, will operate satisfactorily to control and account for materials and supplies.

10

Accounting for Equipment Costs

Accounting for equipment costs starts when the equipment is purchased but the problems peculiar to the construction industry begin when an item is sent to a job or is put into service at the head office. On small jobs equipment costs are often negligible, and there is no formal accounting for them. However, when such costs are substantial, some kind of equipment cost accounting is essential. The first step in controlling equipment costs is to make a complete and accurate record of each piece of equipment at the time it arrives on the job.

Physical control

Some firms use various special forms (Fig. 10.1–10.4) to achieve physical control. Other firms use an ordinary warehouse receiving report. In addition, some contractors use an equipment location card for controlling their own equipment at the job site. Sometimes, too, a similar record is necessary for equipment rented from others when there is much of it.

A standard way to keep track of equipment is to keep an equipment ledger with a separate sheet or card for each unit. It is to this record that the cost of each unit is posted and it is in the equipment

THE PRIME COMPANY
Equipment Receiving Report

No. . . . .

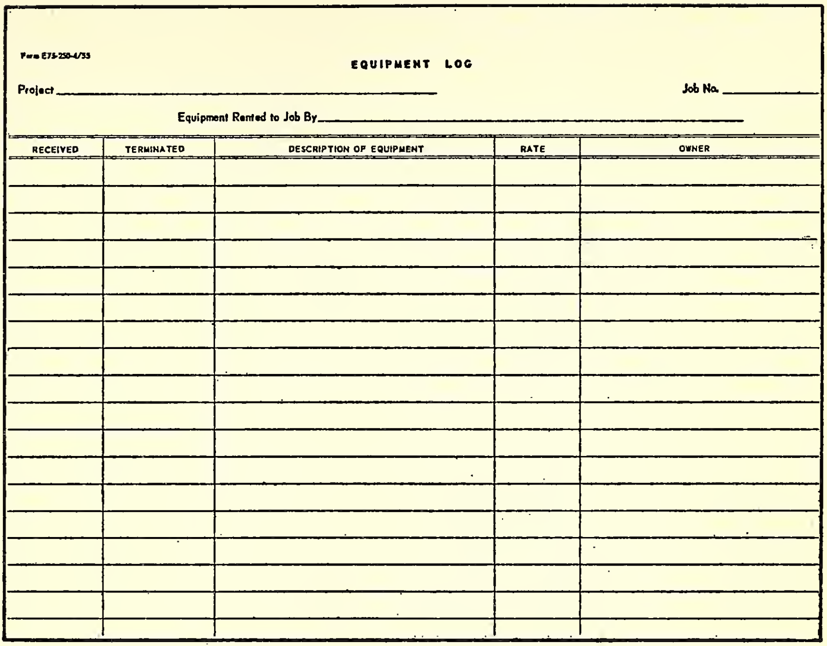
Job No. Location . . . . Date . . . .

Equipment No.		Motor or serial No.	Owner	Description	Condition — Specify any condition not satisfactory in detail	Insurance value	
Job No.	Owner's No.						

Received by . . . . Condition checked by . . . .

Fig. 10.1 Equipment receiving report

This form is prepared in quadruplicate, in different colors. The white copy is sent to the job file; the yellow to the general office; the pink to the equipment timekeeper; and the blue to the accounting department.



Form E75-250-4/55

EQUIPMENT LOG

Project ______________________________ Job No. __________

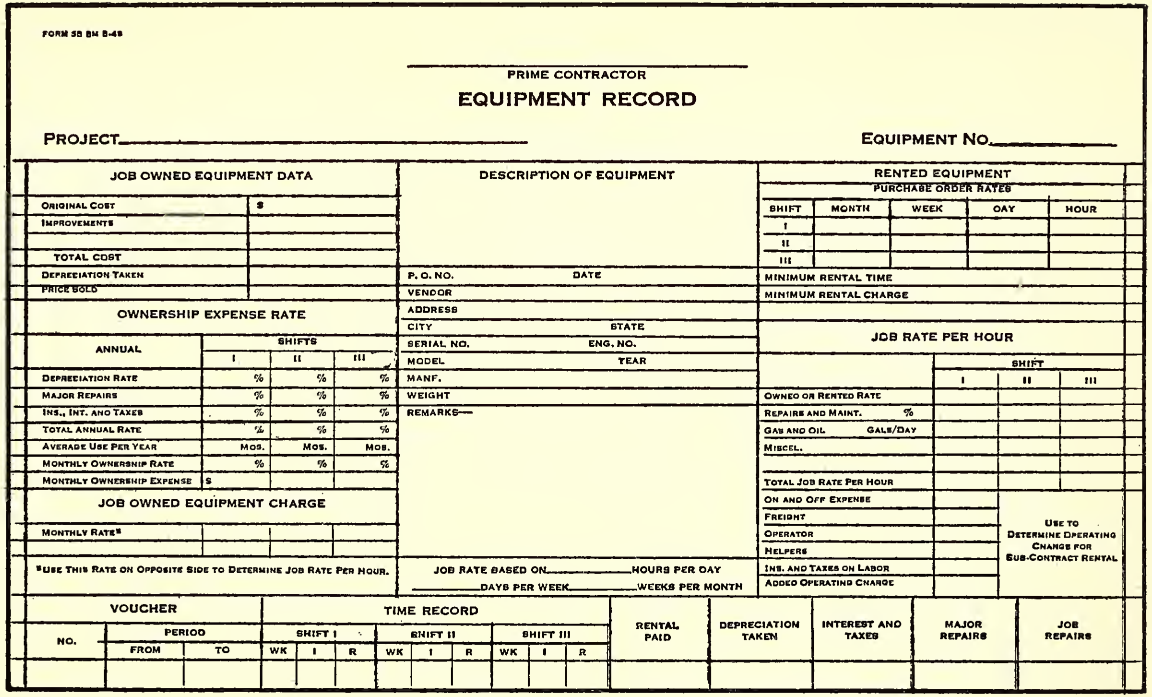
Equipment Rented to Job By ______________________________

RECEIVED	TERMINATED	DESCRIPTION OF EQUIPMENT	RATE	OWNER

Fig. 10.2 Equipment log

ledger that control is kept of shifting combinations. For. example, bulldozer blades, power control units, and similar attachments may be shifted back and forth between tractors. Motors and bodies may be exchanged between trucks. Many other shifts and combinations may be made as the job requires. In a well-kept system these changes will show on work orders, and when the cost of the work order is posted, the necessary changes will also be made in the equipment ledger. At least once each year the physical equipment should be checked against the equipment ledger to see that the record is complete. Income tax considerations alone more than justify the cost of an inventory of equipment.

One of the most important steps in gaining the necessary physical control over equipment on a job is inspection on arrival at the job site. It is fairly standard practice for those who rent equipment, and sometimes even for departments or jobs of the same firm, to make only the barest minimum of repairs before releasing equipment. Thus inspection of condition on arrival is vital, and equipment receiving report should provide for it. In addition, the receiving record should



FORM 58 8M 8-48

PRIME CONTRACTOR
EQUIPMENT RECORD

PROJECT________________ EQUIPMENT NO.________

JOB OWNED EQUIPMENT DATA	
ORIGINAL COST	$
IMPROVEMENTS	
TOTAL COST	
DEPRECIATION TAKEN	
PRICE SOLD	

OWNERSHIP EXPENSE RATE

ANNUAL	SHIFTS I	II	III
DEPRECIATION RATE	%	%	%
MAJOR REPAIRS	%	%	%
INS., INT. AND TAXES	%	%	%
TOTAL ANNUAL RATE	%	%	%
AVERAGE USE PER YEAR	MOS.	MOS.	MOS.
MONTHLY OWNERSHIP RATE	%	%	%
MONTHLY OWNERSHIP EXPENSE	$		

JOB OWNED EQUIPMENT CHARGE

MONTHLY RATE*			

*USE THIS RATE ON OPPOSITE SIDE TO DETERMINE JOB RATE PER HOUR.

DESCRIPTION OF EQUIPMENT

P. O. NO. DATE
VENDOR
ADDRESS
CITY STATE
SERIAL NO. ENG. NO.
MODEL YEAR
MANF.
WEIGHT
REMARKS—

JOB RATE BASED ON________HOURS PER DAY
________DAYS PER WEEK________WEEKS PER MONTH

RENTED EQUIPMENT
PURCHASE ORDER RATES

SHIFT	MONTH	WEEK	DAY	HOUR
I				
II				
III				

MINIMUM RENTAL TIME
MINIMUM RENTAL CHARGE

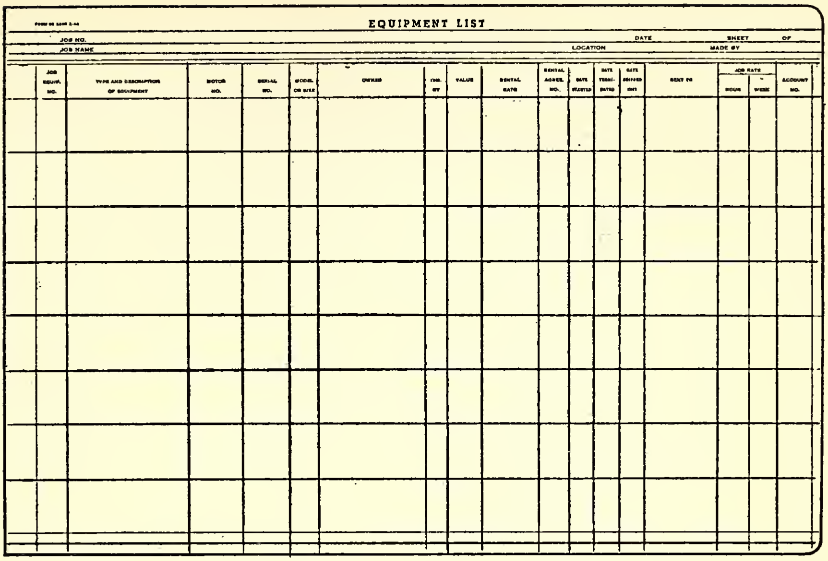
JOB RATE PER HOUR

	SHIFT I	II	III
OWNED OR RENTED RATE			
REPAIRS AND MAINT. %			
GAS AND OIL GALS/DAY			
MISCEL.			
TOTAL JOB RATE PER HOUR			
ON AND OFF EXPENSE		USE TO DETERMINE OPERATING CHARGE FOR SUB-CONTRACT RENTAL	
FREIGHT			
OPERATOR			
HELPERS			
INS. AND TAXES ON LABOR			
ADDED OPERATING CHARGE			

VOUCHER			TIME RECORD									RENTAL PAID	DEPRECIATION TAKEN	INTEREST AND TAXES	MAJOR REPAIRS	JOB REPAIRS
NO.	PERIOD		SHIFT I			SHIFT II			SHIFT III							
	FROM	TO	WK	I	R	WK	I	R	WK	I	R					

Fig. 10.4 Equipment record

Another method of controlling equipment is to keep a ring binder, with a sheet like this one for each piece of equipment.



EQUIPMENT LIST

JOB NO. DATE SHEET OF

JOB NAME LOCATION MADE BY

	JOB EQUIP. NO.	TYPE AND DESCRIPTION OF EQUIPMENT	MOTOR NO.	SERIAL NO.	MODEL OR SIZE	OWNER	INS. BY	VALUE	RENTAL RATE	RENTAL AGREE. NO.	DATE STARTED	DATE TERMINATED	DATE SHIPPED OUT	SENT TO	JOB RATE		ACCOUNT NO.	
															HOUR	WEEK		

Fig. 10.3 Equipment list

This form illustrates one of the methods used to keep a current control of equipment on hand.

show make, model, accessories or extra equipment, serial numbers if any, and any other information which the company may find useful (Fig. 10.4).

Often, the shipping records show that equipment was shipped with attachments and accessories that are missing when the equipment arrives on the job. Such discrepancies require either an insurance claim or correction of the shipping records.

As soon as equipment reaches the job it should be given a job number, or the owner's equipment number should be recorded and used for identification.

Basic accounting

Keeping equipment costs is essentially simple. Whether the equipment is owned or rented, all relevant costs are charged to an account called "Cost of equipment operation" or something similar. As the equipment is used on the job, its use is charged to the cost accounts on an hourly basis (sometimes referred to as "rentals") with the credit going either to "Cost of equipment operation" or to a contra account with some such title as "Equipment costs charged to operations." Under normal circumstances there will tend to be more money charged to the work items than to the "Cost of equipment operation" and the resulting credit balance is used to absorb the cost of overhauls and other extraordinary repairs.

Example: Perhaps a somewhat oversimplified example will illustrate the principles involved:

Assume that a 365-cfm compressor is assigned to a job and the job cost accounts are charged $3 per hour. On the job books the entry for a month of 22 eight-hour days would be:

Dr. Job costs			$528	
Cr. Equipment costs charged to operation				$528
To record equipment charges as follows:				
One 365-cfm compressor for the month				
Charge work items:				
Cost account	No. 3	100 hours	$300	
" "	No. 5	76 "	228	
			$528	

The entry clearing actual costs might look something like this:

Dr. Cost of equipment operation	$285	
Cr. Depreciation		$150
Repairs and maintenance		60
Provision for taxes and insurance		75
To transfer costs for the month to cost of equipment operation		

Note that at this point there has been $243 more charged to operations than the actual costs incurred. Suppose that roughly this rate of accumulation continues for 12 months and the excess builds up to $3,000. Then assume a major overhaul costing $3,150. The excess credit would be wiped out and a debit balance of $150 would be created which would be wiped out by the next month's operations. Meanwhile, however, the cost accounts properly chargeable with the cost of the overhaul have already been charged with their proper share.

Demonstrating with a single piece of equipment tends to oversimplify the example and also the illustrative journal entries, but the principle would be the same regardless of the amount of equipment or the number of cost accounts involved. It would also be the same whether the job accounts were centralized or decentralized.

The method described, like all others, has a great number of variations. Some companies prefer to provide their reserves for major repairs through larger depreciation provisions, thus building up an excess credit balance in the depreciation reserve. Other companies, instead of compiling costs by individual units, compile them according to types of equipment. Thus, compactors, pumps, gunite equipment, and so on, might form three classes of equipment for cost accounting purposes. This method has the advantage of reducing the paper work and at the same time producing averages that tend to smooth out the differences between individual pieces of equipment. If the averages are used in estimating this feature could be important.

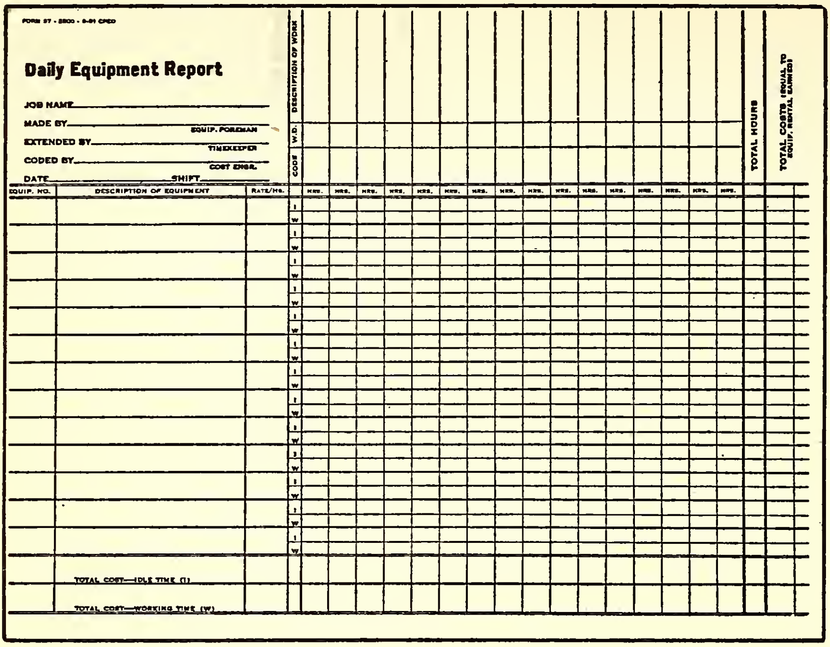
Keeping equipment time

Whatever the procedures used in accounting for equipment costs, it is necessary to keep time on equipment in much the same way as it is kept on labor. For the many small firms whose operations require little or no equipment aside from a pickup truck and a few power-operated hand tools, the need to have any special accounting for equipment costs is negligible. When some portion of a job requires equipment the company does not have, they either subcontract that portion or rent the needed equipment and return it as soon as their need has been satisfied. For contractors in this category it would be a waste of money to keep time on equipment.

For any contractor whose equipment costs are a substantial part of the cost of his work, keeping time on equipment is essential. Equipment time records are the starting point for equipment cost control because most of the costs are incurred on the basis of time. If equipment is rented, the rentals are generally based on some time period. If the equipment is owned, such ownership charges as depreciation, taxes, and insurance are clearly based on time. Even such items as maintenance, repairs, and provision for major overhauls are provided for in the accounts on the basis of operating hours.

One of the simplest forms for equipment timekeeping is a daily time sheet (Fig. 10.5) showing each piece of equipment on the job and the hours spent on each of the several kinds of work or on each of the separate work items in the cost code (Chap. 4). It is submitted daily with the labor time sheets and is checked against the operators' time, then it is sent to the person who maintains the equipment cost records and who possibly prepares an equipment payroll (Fig. 10.6).

Another form for keeping time on equipment is the daily equipment time card (Fig. 10.7). Another form (Fig. 8.17, 8.18) has the operator's time card attached. After these cards have come in for



Daily Equipment Report

JOB NAME________

MADE BY________ EQUIP. FOREMAN

EXTENDED BY________ TIMEKEEPER

CODED BY________ COST ENGR.

DATE________ SHIFT________

DESCRIPTION OF WORK

W.O.

CODE

EQUIP. NO. | DESCRIPTION OF EQUIPMENT | RATE/HR. | I / W | HRS. | HRS. | HRS. | HRS. | HRS. | HRS. | HRS. | HRS. | HRS. | HRS. | HRS. | HRS. | HRS. | HRS. | HRS. | HRS. | TOTAL HOURS | TOTAL COSTS (EQUAL TO EQUIP. RENTAL EARNED)

TOTAL COST—IDLE TIME (I)

TOTAL COST—WORKING TIME (W)

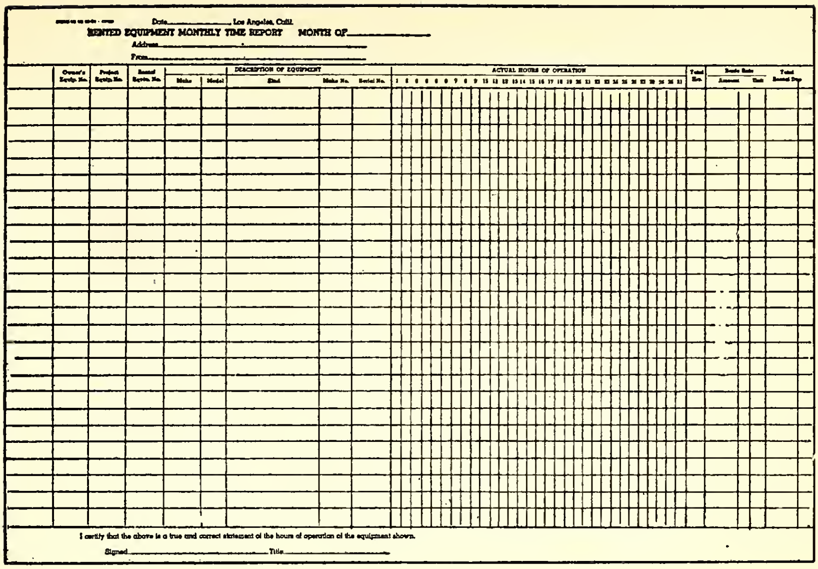
Fig. 10.5 Daily equipment report

An equipment payroll can be prepared from this timesheet.

the day they may be checked for accuracy and then coded and punched for sorting. Ultimately they will be summarized on an equipment payroll.

There are many other forms for reporting equipment time but those described illustrate the main principles. On jobs where there are many pieces of equipment, and costs are compiled according to classes of equipment rather than by individual units, the time is also compiled by classes of equipment. With less equipment, however (50 pieces or less), it is simpler to compile costs by individual units.

One form of equipment record sheet (Fig. 10.4) controls both individual pieces of equipment and the costs of their operation. Whether all of the data called for by this sheet would be compiled for any one piece of equipment or not, the form is a good checklist of the things a contractor might want to know about the equipment on any particular job. This form would not, as a rule, replace the equipment cost ledger (Fig. 10.8). A simplified form (Fig. 10.9) shows the accumulation of equipment time on a daily basis.



Date____________, Los Angeles, Calif.

RENTED EQUIPMENT MONTHLY TIME REPORT MONTH OF____________

Address____________

From____________

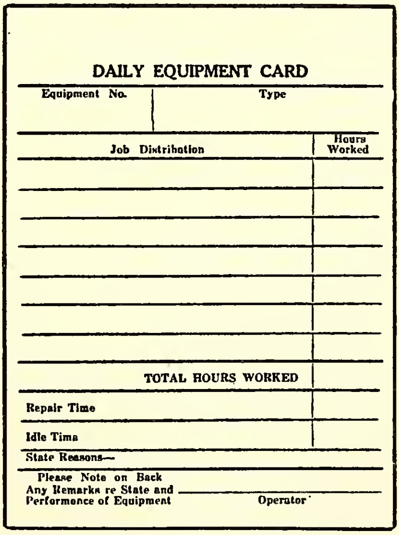
	Owner's Equip. No.	Project Equip. No.	Rental Equip. No.	Description of Equipment					Actual Hours of Operation	Total Hrs.	Rental Rate		Total Rental Due
				Make	Model	Kind	Make No.	Serial No.	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31		Amount	Unit	

I certify that the above is a true and correct statement of the hours of operation of the equipment shown.

Signed____________ Title____________

Fig. 10.6 Equipment payroll

This form provides all the data needed when equipment is rented by the month. It is somewhat more complete than those used by many contractors.



DAILY EQUIPMENT CARD

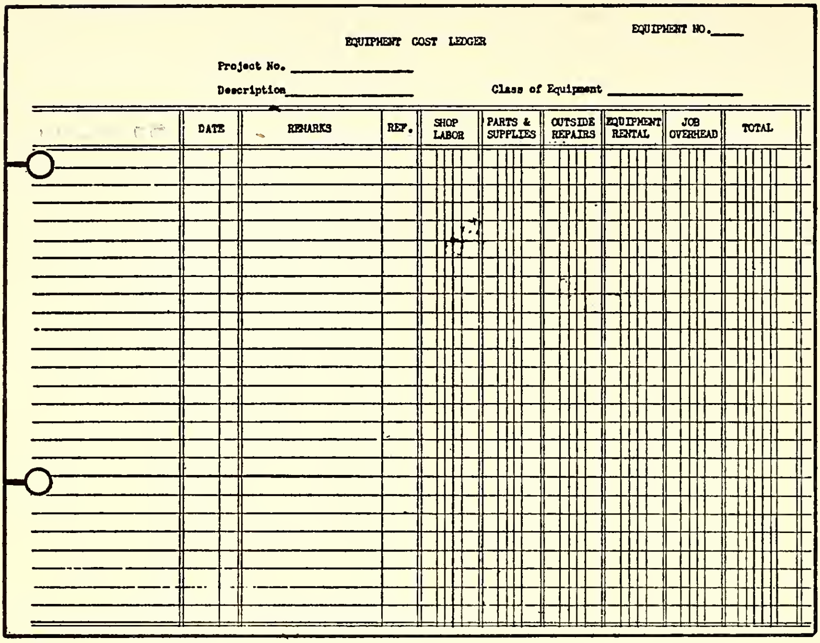
Equipment No.	Type
Job Distribution	Hours Worked
TOTAL HOURS WORKED	
Repair Time	
Idle Time	

State Reasons—

Please Note on Back
Any Remarks re State and
Performance of Equipment ____________ Operator

Fig. 10.7 Equipment time card

This card does not have an operator's time card attached. A combination equipment time card and operator's time card is shown in Fig. 8.18.



EQUIPMENT NO.____

EQUIPMENT COST LEDGER

Project No. ________________

Description________________

Class of Equipment ________________

	DATE	REMARKS	REF.	SHOP LABOR	PARTS & SUPPLIES	OUTSIDE REPAIRS	EQUIPMENT RENTAL	JOB OVERHEAD	TOTAL

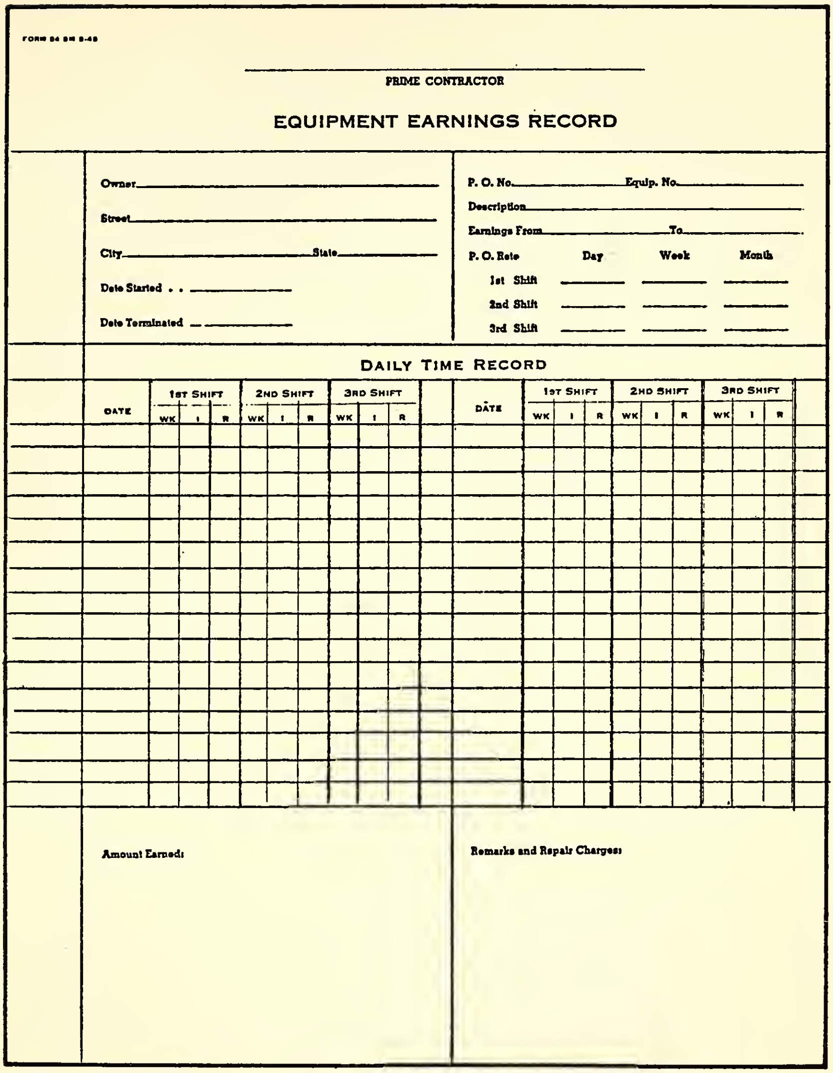
Fig. 10.8 Equipment cost ledger

This form provides a convenient way of summarizing information if costs are kept by individual pieces of equipment or by groups of similar equipment.

Repair and maintenance costs

If a contractor has very little equipment it may pay him to have repair and maintenance work done by an outside agency, which will, of course, submit repair orders to cover all work done. If a contractor uses any substantial amount of equipment, he normally repairs it in his own shops. One of the easiest ways to keep track of repair costs in the contractor's own shops is to use a shop order (Fig. 10.10) or repair order (Fig. 10.11). Each day the time of the shop crew is balanced against the labor time shown on the repair orders and the differences accounted for. When this procedure is followed care must be taken to see that jobs are not loaded with idle time.

The entire cost of operating the shop is charged to an account called "Equipment repairs and maintenance" or some similar title, and this account is credited with amounts charged to "Cost of equipment operation." From this account, as previously indicated, the costs are charged out to work items in the cost ledger.



FORM 84 5M 8-48

PRIME CONTRACTOR

EQUIPMENT EARNINGS RECORD

Owner
Street
City State
Date Started . .
Date Terminated

P. O. No. Equip. No.
Description
Earnings From To

P. O. Rate	Day	Week	Month
1st Shift			
2nd Shift			
3rd Shift			

DAILY TIME RECORD

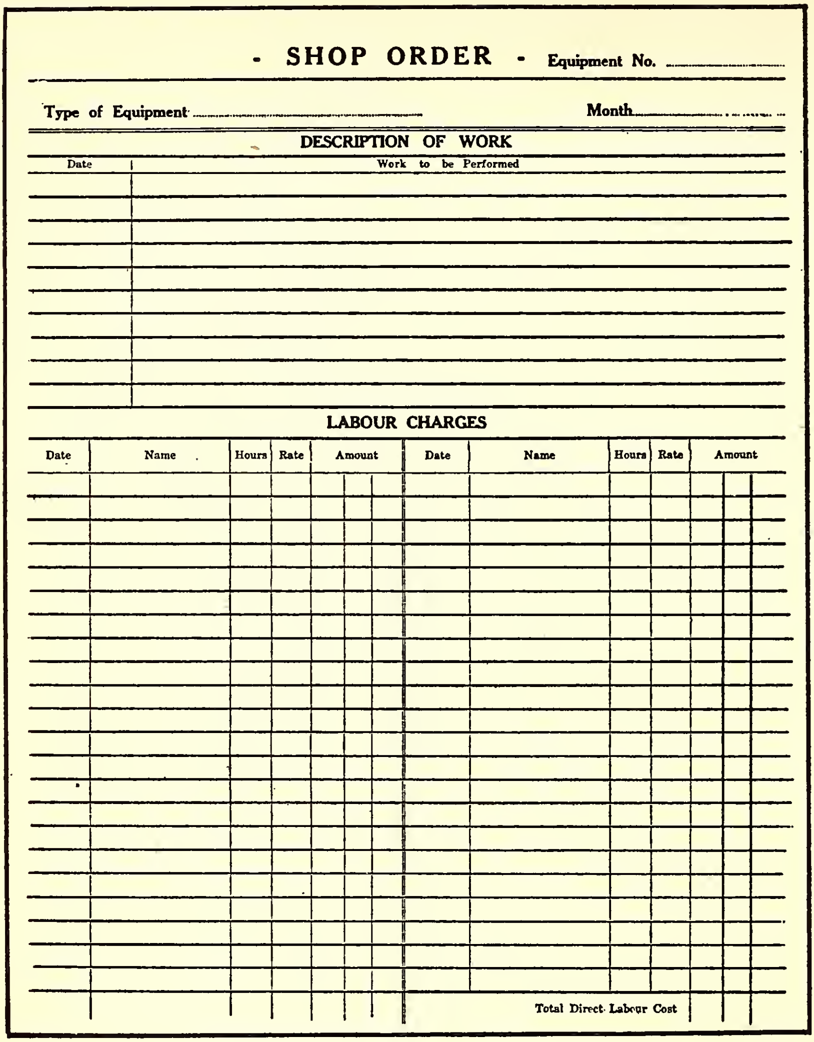
DATE	1st SHIFT			2nd SHIFT			3rd SHIFT			DATE	1st SHIFT			2nd SHIFT			3rd SHIFT		
	WK	I	R	WK	I	R	WK	I	R		WK	I	R	WK	I	R	WK	I	R

Amount Earned:

Remarks and Repair Charges:

Fig. 10.9 Equipment earnings record

Essentially a time report on which space is provided to compute total earnings and offset repair and maintenance costs, this form is best adapted to systems in which equipment costs and time are kept on a memo basis.



- SHOP ORDER - Equipment No. ....

Type of Equipment .... Month ....

DESCRIPTION OF WORK

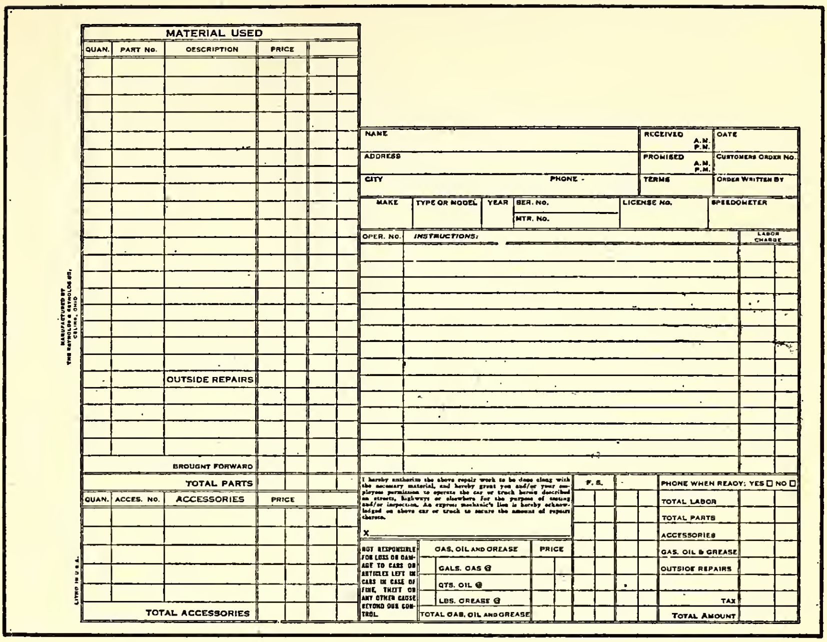
Date	Work to be Performed

LABOUR CHARGES

Date	Name	Hours	Rate	Amount	Date	Name	Hours	Rate	Amount
					Total Direct Labour Cost				

Fig. 10.10 Shop order

This form and the equipment repair order shown in Fig. 10.11 both provide a means of summarizing equipment repair and maintenance costs. The reverse of this card is a parts list and cost summary.



MANUFACTURED BY
THE REYNOLDS & REYNOLDS CO.,
CELINA, OHIO

MATERIAL USED
QUAN. | PART No. | DESCRIPTION | PRICE
OUTSIDE REPAIRS
BROUGHT FORWARD
TOTAL PARTS
QUAN. | ACCES. No. | ACCESSORIES | PRICE
TOTAL ACCESSORIES

LITHO IN U.S.A.

NAME | RECEIVED A.M. P.M. | DATE
ADDRESS | PROMISED A.M. P.M. | CUSTOMERS ORDER No.
CITY PHONE - | TERMS | ORDER WRITTEN BY
MAKE | TYPE OR MODEL | YEAR | SER. No. / MTR. No. | LICENSE No. | SPEEDOMETER
OPER. No. | *INSTRUCTIONS:* | LABOR CHARGE

I hereby authorize the above repair work to be done along with the necessary material, and hereby grant you and/or your employees permission to operate the car or truck herein described on streets, highways or elsewhere for the purpose of testing and/or inspection. An express mechanic's lien is hereby acknowledged on above car or truck to secure the amount of repairs thereto.

X________________

NOT RESPONSIBLE FOR LOSS OR DAMAGE TO CARS OR ARTICLES LEFT IN CARS IN CASE OF FIRE, THEFT OR ANY OTHER CAUSE BEYOND OUR CONTROL.

GAS, OIL AND GREASE | PRICE
GALS. GAS @
QTS. OIL @
LBS. GREASE @
TOTAL GAS, OIL AND GREASE

F. S.

PHONE WHEN READY: YES ☐ NO ☐
TOTAL LABOR
TOTAL PARTS
ACCESSORIES
GAS, OIL & GREASE
OUTSIDE REPAIRS
TAX
TOTAL AMOUNT

Fig. 10.11 Equipment repair order

This form is manufactured by Reynolds & Reynolds Co., principally for use in repair shops maintained by automobile dealers. However, it is an excellent form for recording the cost of construction equipment repairs and maintenance.

If repair and maintenance costs are charged to individual pieces of equipment in the equipment cost ledger, it becomes a relatively simple matter to learn when costs of maintenance and repair on any individual piece of equipment exceed its earning power. When such a unit is found it must be disposed of before its costs eat up the profit made by a good machine.

Depreciation

There are five principal methods of depreciation commonly in use in the construction industry:

1. Straight line
2. Production hours
3. Production units

4. Fixed-rate-on-declining-balance
5. Sum-of-the-years'-digits.

To compare their operation, assume a contractor has a power shovel which cost $10,500; that it has a salvage value, when worn out, of $500; and that it has an estimated useful life of five years, or 8,000 operation-hours, or 250,000 yards of material moved.

By the straight-line method, one fifth of the $10,000 depreciable value, or $2,000, would be written off during each of its five years of useful life.

By the production-hour method, the $10,000 depreciable value would be apportioned over 8,000 hours of expected operation, and so each hour would be charged with $1.25 to cover depreciation.

By the production-unit method the $10,000 depreciable value would be apportioned over 250,000 yards of material which the shovel is expected to move during its expected life, and the charge for each yard would be four cents.

The fixed-rate-on-declining-balance method is illustrated in Schedule 10.1. This method first came into popular use after the 1954 Internal Revenue Code approved it at 200 per cent of straight-line rates for new equipment only.

SCHEDULE 10.1/FIXED-RATE-ON-DECLINING-BALANCE WRITE-OFF

Depreciable cost	$10,500.00
Less 1st year's depreciation	
40% of $10,500	4,200.00
Book value after one year	$ 6,300.00
Less 2nd year's depreciation	
40% of $6,300	2,520.00
Book value after two years	$ 3,780.00
Less 3rd year's depreciation	
40% of $3,780	1,512.00
Book value after three years	$ 2,268.00
Less 4th year's depreciation	
40% of $2,268	907.20
Book value after four years	$ 1,360.80
Less 5th year's depreciation	
40% of $1,360.80	544.32
Book value after five years	$ 816.48

By the sum-of-the-years'-digits method, the $10,000 depreciable value would be written off as shown in Schedule 10.2. This method was also virtually unknown until authorized by the 1954 Internal Revenue Code for new assets only.

SCHEDULE 10.2/SUM-OF-THE-YEARS'-DIGITS WRITE-OFF

Year No.	1	⁵⁄₁₅ of $10,000	$ 3,333.33
	2	⁴⁄₁₅ of $10,000	2,666.67
	3	³⁄₁₅ of $10,000	2,000.00
	4	²⁄₁₅ of $10,000	1,333.33
	5	¹⁄₁₅ of $10,000	666.67
Total	15		$10,000.00

A sixth method, sometimes used for large jobs and joint ventures, is to charge the entire cost of the equipment to the job and to sell or appraise the equipment when the job is over, crediting job costs with the sales price or appraisal value at the end of the job. This method, however, can hardly be called depreciation in the strict sense of the term.

What is the "correct" rate of depreciation to charge on equipment of a given type? This question does not have a categorical answer because conditions vary too widely on construction jobs. For example, dump trucks, which might last several years on some jobs, may be completely worn out in a few months on others. The life to be assigned to any piece of equipment is whatever can reasonably be expected.

There is a tendency, particularly on the part of accountants, and other nonoperating personnel, to set too high an estimate of useful life of equipment. As a rule of thumb, some of the larger engineering contractors work on the principal that equipment loses half of its value on each job, and in the long run, if jobs last from one to two years, this rule often proves surprisingly accurate.

The fallacy of trying to arrive at "average" or "normal" rates is pointed up very clearly in the Treasury Department's Bulletin "F" which found its greatest usefulness in providing a table of maximum lives, which most taxpayers reduced, and with ample reason. It is better for each company to make its own estimates of the proper lives to place on equipment.

Some firms, instead of establishing a rate for each piece of equipment, will establish a composite rate for all types of equipment. Composite lives have the advantage of convenience in accounting, but if much money is involved there are disadvantages that are not to be overlooked. The greatest of these is the difficulty of establishing reasonable hourly rates for charging equipment costs to the job. If the amount of equipment is small, and equipment costs are not kept, then the single composite rate is justified by its simplicity. Otherwise there seems to be little to recommend it.

Actual depreciation charges, even on similar pieces of equipment, will tend to vary, and this variation can cause some puzzling differences in unit costs. One of the ways to overcome this problem is to use standard hourly rates to distribute equipment costs to work in process. The effect on unit costs is to eliminate substantially such variations, particularly if overhauls are charged to the reserve for depreciation or to some special credit balance account.

The use of group rates for charging equipment costs to operations has already been mentioned. The practice of using group depreciation rates for all pieces of equipment of the same kind or of the same life is well established and is quite useful in a large spread. If this method is followed, each year's acquisitions must, of course, be segregated by groups in maintaining fixed asset and depreciation records.

If there is very little equipment, and no equipment costs are kept, depreciation is not important enough to justify any substantial amount of accounting. The greater the investment in equipment the greater the effect of depreciation policies on cost keeping.

Many construction executives take the attitude that "you can't pay bills with tired iron." In other words, until the equipment has been depreciated so that its cost is charged off to operating costs, the books will show an inflated figure for the value of such equipment, thus distorting the profit picture and perhaps misleading the contractor into thinking that he has more cash for working capital than is actually available. This viewpoint has a great deal to recommend it. However, it also has these weaknesses. If equipment is charged off there is a tendency to buy more when there is no real need to do so. Also, if costs have been burdened by unjustifiably heavy depreciation, unit costs will tend to be high and in a competitive bidding market the company may lose bids it should win. Some apt rejoinders to the "tired iron" quip might include:

1. "When you're bidding for work, they don't pay off on second place."
2. "If you write it all off against this job there won't be anything to write off against the next one."
3. "Just because your equipment is all written off there's no reason why you should leave all your profit on the table."

These observations are just another way of saying that if your estimators are going to get any help from your past experience, they must have accurate unit costs to work with. In the final analysis, the most profitable depreciation rates are those that are most realistic in terms of charging the cost of equipment to the operations that benefitted from its use.

Tax aspects: Discussion of the tax aspects of depreciation usually centers on income taxes. In some states the tax on personal property is a factor to be considered, and where "book value" forms the basis of assessment, depreciation is involved. Still, income taxes (both federal and state) are the most important of all.

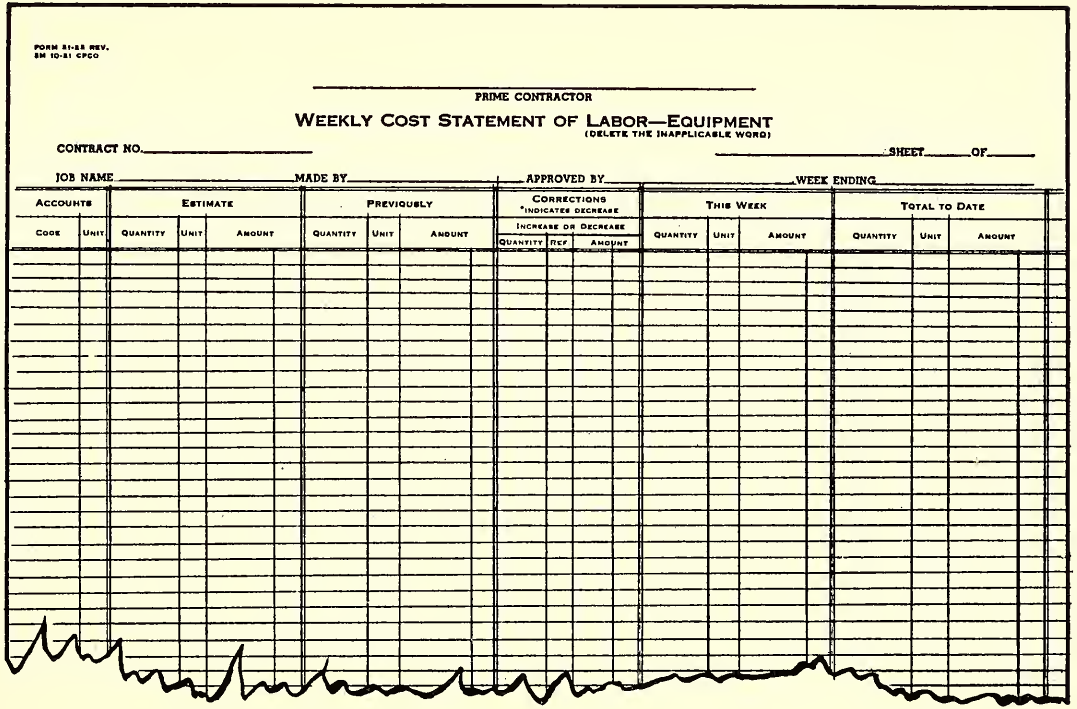
To the extent that it is currently deductible in determining taxable income, depreciation increases costs and correspondingly reduces profits; even in years when there are no profits to deduct it from, however, the depreciation must still be claimed. Sometimes the depreciation cost of loss years can be recovered through net operating loss carry-backs and carry-overs, but this method involves a great many uncertainties and under some state tax regulations, operating losses may not be carried to other years.

Among the most realistic of the depreciation methods, for tax purposes, are the fixed-rate-on-declining-balance and years'-digits methods. These may be applied only to completely new equipment and may be elected on a piece by piece basis.

If the contractor wishes, he may enter into an agreement with the Bureau of Internal Revenue to fix rates of depreciation. Such an arrangement may be worth while if the contractor is large enough to be certain of an examination every year. Smaller contractors have generally been hesitant about requesting such an agreement for fear of arbitrary treatment at the hands of Bureau personnel. Although this fear is generally not well founded, unpleasant incidents do seem to occur often enough to give substance to the stories of tax gouging that always come up when depreciation agreements are mentioned.

One fairly common tax planning device among contractors has been to overdepreciate equipment, sell it to a related company or joint venture, and then pay tax on the gain at capital gains rates and establish a new basis for depreciation that is deductible from ordinary income. Since 1954 this practice has become largely unprofitable, because of the effect of Internal Revenue Code Section 1239 which, in a considerable number of related-taxpayer situations, requires the gain to be treated as ordinary income and not as capital gain.

One advantage of the newly accepted (1954) depreciation methods is that a contractor who is short on cash may now, to a large extent,



FORM 21-22 REV.
5M 10-21 CPCO

PRIME CONTRACTOR

WEEKLY COST STATEMENT OF LABOR—EQUIPMENT
(DELETE THE INAPPLICABLE WORD)

CONTRACT NO.________ ________ SHEET____ OF____

JOB NAME________ MADE BY________ APPROVED BY________ WEEK ENDING________

Accounts		Estimate			Previously			Corrections *Indicates decrease Increase or Decrease			This Week			Total to Date		
Code	Unit	Quantity	Unit	Amount	Quantity	Unit	Amount	Quantity	Ref	Amount	Quantity	Unit	Amount	Quantity	Unit	Amount

Fig. 10.12 Weekly cost statement

The function of this weekly report is to compare the costs actually incurred with those provided for in the estimate. It can be used for either equipment or labor costs.

finance new equipment purchases with "depreciation money." This is not to say that depreciation reserves are, or should be, set aside in cash, but merely that where a large percentage of the cash revenue goes for taxes, there is often too little to meet current payments from current revenue.

Equipment cost reports

Equipment costs on most construction jobs usually arise from three general types of equipment operations. First is the operation of production plants, such as aggregate plants, concrete batch plants, and asphalt plants. The actual costs of operating these plants are charged to an account bearing some such title as "Plant operations" and the charges to the job cost accounts are based on an amount per yard of material produced. The credits contra to these charges would be either to "Plant operations" or to a special account set up to take the credits.

Second is the operation of heavy or major equipment. This includes power shovels, tractors, carry-alls, trucks, cranes, compressors, motor graders, compactors, and similar equipment. Accounting for these costs has been described under the heading "Basic accounting" early in this chapter. Essentially it is similar to that just described for plant costs except that the basis for charging the job cost accounts is usually hours worked.

Third is the operation of a very large number of items, too small to be classed as heavy or major equipment, but too large to be treated as tools and supplies. Some examples are power-operated concrete buggies, air tools, vibrators, chain saws, office equipment, engineering equipment, carpenter shop and machine shop equipment, warehouse equipment, and camp and mess hall equipment.

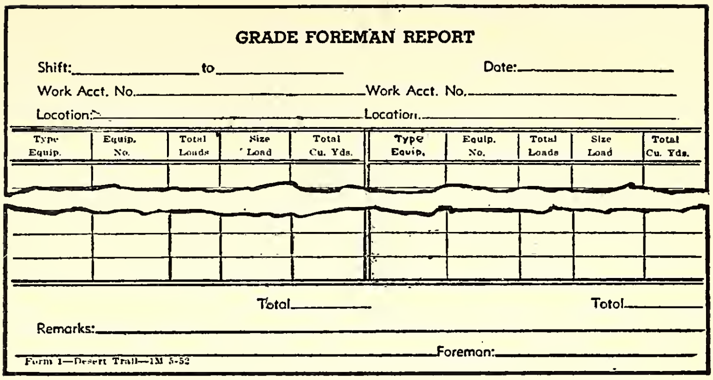
The easiest way to account for the cost of minor equipment is to give it a nominal salvage value of perhaps $10 to $15 per unit, and write the balance off at the rate of 40 per cent to 50 per cent per year. If the jobs are large, the entire value may be written off over the life of the job and any minor equipment remaining can be appraised and credited back to the job. On smaller jobs, where centralized control is kept in the general office, such equipment is usually charged out to the job at a daily or monthly rate and a single cost account kept to receive the costs of its ownership and operation.

Various forms (Fig. 10.4–10.7) for keeping equipment time have been illustrated. The purpose of each form is to show the time charged to each work item or cost account. As the time is compiled and the accounts are charged for it at the standard rates, job management often needs current comparisons between equipment costs incurred and those estimated for each work item. The weekly cost statement is a form designed to provide this comparison for both labor and equipment costs. The fact that one form can serve for the reporting of both classes of costs points up the similarity in the procedures for recording and reporting them.

It must be emphasized that forms and procedures for reporting vary as widely as the reporting requirements. The important point is that equipment cost, like labor cost, is an important item in the total cost of many construction jobs. It is referred to by accountants as a variable cost because, like labor cost, it tends to vary directly with the volume of work. Also, like labor, it tends to respond quickly to the efforts of management. The cost statement (Fig. 10.12) may be needed daily rather than weekly. On the other hand, if labor control is good, it may not be needed at all, because the control on the operators' labor serves a double purpose. Like all reports, equipment cost reports should be made only when and if they are useful to job management in determining where and how to direct its efforts.

Often, instead of an over-all report on all job equipment costs, a special report for those operations where heavy concentrations of equipment are used will serve job management's purposes better. Thus a batch plant may report the daily yardage run or a spreader operation the yardage of material placed. The grade foreman's report (Fig. 10.13) illustrates such a form for an earthmoving job. Note that if work is being done at scattered locations a superintendent can tell at a glance from this form: (1) what equipment is at the location, (2) the specific units in use, (3) whether they are working or idle, (4) whether they are working to capacity, and (5) the total yardage moved for the day.

When a substantial amount of equipment is being rented, one of the ever-present problems is to remove it from the job and stop the rental as soon as the equipment is no longer needed. On the other hand, if equipment is taken off the job too soon it is very expensive to bring it back temporarily, and it is often even more expensive to try to do the work with inadequate tools. Basically, the answer to this problem lies in effective planning for equipment use, but if a superintendent is failing to plan adequately, one way of detecting his error is through the daily equipment rental report (Fig. 10.14). Such a daily report is the basis for the monthly "payroll" (Fig. 10.6) for rented equipment.



GRADE FOREMAN REPORT

Shift:__________ to __________ Date:__________

Work Acct. No.__________ Work Acct. No.__________

Location:__________ Location.__________

Type Equip.	Equip. No.	Total Loads	Size Load	Total Cu. Yds.	Type Equip.	Equip. No.	Total Loads	Size Load	Total Cu. Yds.

Total__________ Total__________

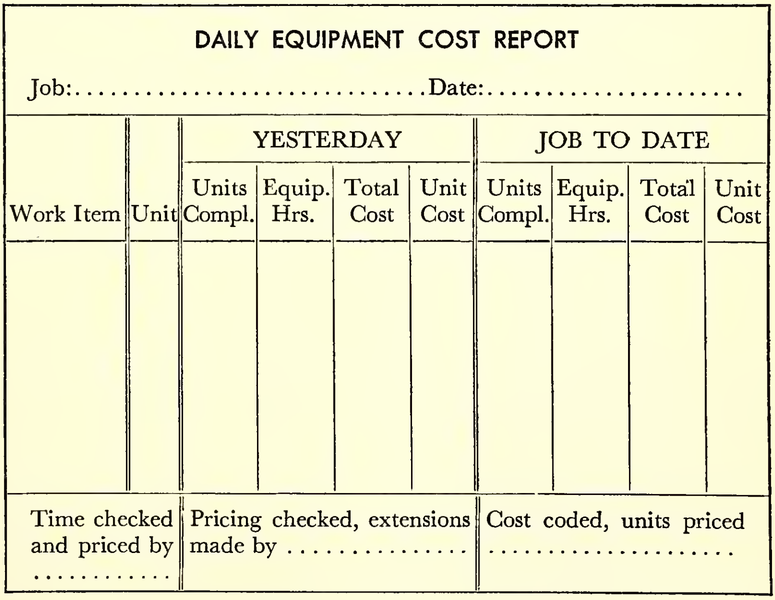
Remarks:__________

__________ Foreman:__________

Form 1—Desert Trail—1M 5-52

Fig. 10.13 Grade foreman's report

An example of the specialized forms that each company may devise for its own particular needs, this form is designed to provide job management with current information on an earthmoving job.



DAILY EQUIPMENT COST REPORT

Job:............................Date:......................

Work Item	Unit	YESTERDAY				JOB TO DATE			
		Units Compl.	Equip. Hrs.	Total Cost	Unit Cost	Units Compl.	Equip. Hrs.	Total Cost	Unit Cost

Time checked and priced by	Pricing checked, extensions made by	Cost coded, units priced ....

Fig. 10.14 Daily equipment cost report

This form is useful on jobs for which equipment costs are large in relation to total cost.

Moving costs

One of the pitfalls of construction cost keeping is the cost of moving. All too often it is overlooked in bidding because of a hope that someone else will pay for it. However that may be, the cost of moving equipment to a job and then moving it away is a very large and a very important item in any job where a substantial amount of equipment is used. In fact, on a $1 million earthmoving job, it is not unusual to see a budget of from $20,000 to $50,000 for move-in, move-out costs.

If accurate unit costs are to be kept, the moving costs must be written off to job costs in proportion to the amount of equipment used on each job. Actual move-in costs will normally be charged to an account of that name or to a special subdivision of the "Equipment operating cost" account. To the standard rate per hour, or per unit, a certain amount or percentage is added to cover the move-in, move-out costs. When the move-in costs have been fully absorbed, a credit balance develops in the account and it is against this credit balance that move-out costs are charged.

There are, of course, other bases for writing off the move-in, move-out costs. Sometimes these costs are added to overhead and absorbed on the basis of total direct costs. At other times direct labor hours or direct labor cost provides a better or more accurate measure. Generally, however, adding a percentage to the equipment operating rates provides the most satisfactory basis for distribution. If there are loading and unloading costs or assembly and dismantling costs, they are usually handled in the same way as move-in, move-out costs and often as a part of them.

Equipment rentals

The problems that accompany the rental of equipment fall into the following general categories:

1. Rates
2. Move-in and move-out
3. Loading and unloading
4. Assembling and dismantling
5. Rental period
6. Condition and repairs
7. Insurance and valuation
8. Idle time.

Of course, in any well-drawn equipment rental contract these points must be carefully covered.

Rates: Ordinarily equipment is rented on a monthly basis. Rentals for fractional months are usually stated in days, and fractional days are usually stated in either shifts or hours. It is not unusual, if equipment is to be worked for more than one shift, to find the rental rate stated in terms of a daily rate on a one-shift basis. For two shifts the rate would be one and one-half times the rate for one shift. If the equipment worked three shifts there would be no extra charge for the third shift. Usually, however, rates are stated at a flat amount per month and it is up to the contractor to determine the usage and to keep the equipment running. If special attachments are normally used with the types of equipment being rented it is important to know what attachments the contract rate includes.

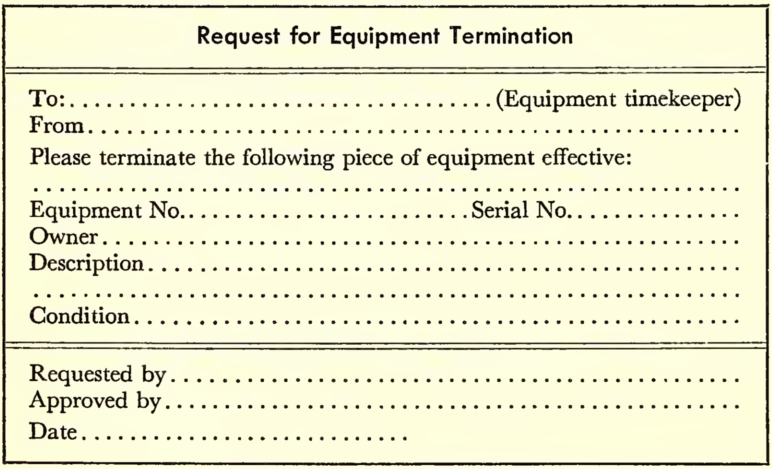
Moving costs: The cost of moving the equipment from the owner's yard to the user's job and back again is borne by the user. However, problems arise when the equipment is not being moved from (or to) the owner's yard but instead is sent from one job to another. If the hauls from job to job are greater than the distance from the owner's yard to the user's job a question arises as to who pays the difference. One common provision found in equipment rental contracts provides that the user will pay the cost of transportation to the job and return but that this charge is not to exceed the cost of transporting the equipment from the owner's yard to the job and back again.

Even with this type of provision, an alert owner can sometimes collect twice for some part of the transportation charges. Users sometimes guard against this by providing that the owner must certify that return transportation is not being paid for by the next user. It is fairly common to limit the amount to be paid for transportation.

Loading: Unloading and reloading at the job site are usually performed at the user's expense. If the equipment comes from or returns to the owner's yard, the owner may have some loading or unloading expense to pay, but if it moves from one job directly to another, the owner is saved this cost. Obviously an owner will consider this fact when deciding whether to remove a piece of equipment from a job immediately upon notice from the user that he is through with it.

Assembly: If production plant or heavy equipment must be assembled after it arrives on the job and disassembled before it leaves, the costs are often quite heavy. It is standard operating procedure for the user to pay these costs except when a seller sends his own crew to assemble a new plant and see that it is properly placed in operation.

Rental period: For light equipment, rented for a comparatively short time, the rental period customarily starts when the equipment leaves the owner's yard and ends when it is returned. On heavier equipment that is rented for longer periods, it is customary to find the rental period starting when the equipment is loaded for shipment and ending a stated time (say three days) after notice of termination and availability (Fig. 10.15) is given by the user. Often, to avoid the cost of unloading and reloading at the owner's yard, an owner will leave equipment stored at the user's job site until it is to be shipped elsewhere. When this happens, the temptation is great to use the equipment without paying rent for it. On the other hand, the user must be careful to see that no rent is paid for idle equipment which is merely awaiting shipping orders.



Request for Equipment Termination

To:.................................(Equipment timekeeper)
From...
Please terminate the following piece of equipment effective:
....
Equipment No.......................Serial No..............
Owner..
Description..
....
Condition..

Requested by.......................................
Approved by..
Date.........................

Fig. 10.15 Request for equipment termination

When equipment is being rented it must be kept busy or its cost will be lost to the job. Most rental contracts require notice of termination of rented equipment. This form is satisfactory for that purpose.

A special problem, which usually is the subject of a special provision in the equipment rental contract, is the user's liability for rent during time lost through strikes, storms, or other reasons beyond the user's control. Some contracts terminate the rental entirely, others provide for a special "standby" rate which is often about half of the regular rate. Still others make no provision at all for such contingencies. The alert user will usually demand some protection against this kind of situation.

Condition: Equipment that arrives at the job site in such poor condition that it cannot reasonably be operated does not usually incur rental charges until it is repaired, and the cost of such repair is customarily borne by the owner. Because, on the other hand, the user is normally responsible for ordinary repairs during the rental period and for returning the equipment in as good an operating condition as when it arrived, most equipment rental contracts make provision for inspection on arrival and departure. It is usual for such contracts to provide that if one party fails to have an inspector on the site, that party agrees to accept the findings of the other party's inspector.

Insurance: Most equipment rental contracts require the user to insure the equipment against accidental loss or damage and, because most insurance policies of that type are based on the value of the equipment, the value is usually agreed upon in the contract.

Idle time: Whether equipment is owned or rented, it costs money whenever it is idle. To charge idle equipment time to cost accounts or work items is to distort costs and conceal a source of waste. Hence most equipment time records call for an accounting for idle time. The easiest way to report on idle time is to account for it separately in the cost ledger as if it were a separate item of job overhead cost (which in fact it is). The account set up is charged with the out-of-pocket costs of ownership (taxes, insurance, depreciation and sometimes storage) for all hours except the "normal" idle time which is figured into the hourly rate.

Owning or renting

One of the greatest risks any business can incur is that of having a large portion of its capital tied up in nonproductive assets. Construction equipment sitting idle in the contractor's yard or warehouse is more than just nonproductive. It demands outlay for insurance and for maintenance, and depreciation continues just about as fast as if the equipment were working. Worst of all, a contractor who has all his profit tied up in equipment at the end of a job finds himself in the unhappy position of having income taxes to pay and no money to pay them with.

Therefore many contractors (particularly those in lines where heavy equipment is needed) prefer either to subcontract those portions of the work that require equipment or to rent whatever equipment is needed to do the job on hand. By so doing, these firms avoid not only the heavy capital commitments required by equipment ownership but also the temptation to "make do" with inadequate or unsuitable equipment simply because it is available.

One alternative to this policy is sometimes used on very large jobs, particularly those run by joint ventures. That is to buy new equipment at the start of the job and sell it at the end of the job.

Another alternative commonly followed is for a construction company to own a separate equipment company. The combined group buys at dealer prices, makes the maximum profit, and, by renting to others, manages to cut idle time to a minimum.

On the other hand, when the work volume is reasonably steady and the variety of equipment required is not too great, many contractors find it both convenient and profitable to own equipment. Also, many prospective clients for construction work require that all bidders submit a brochure showing, among other things, a list of equipment owned by the contractor. Rightly or wrongly, there is a tendency on the part of some prospective clients and their architects, as well as some public bodies, to question the stability of a contractor who owns no equipment.

There are many compromises between the extremes of owning all the necessary equipment or none of it. Many excavation contractors own their power shovels and bulldozers but rent their trucks from independent truck owners who drive and maintain their own vehicles. The drivers are placed on the contractor's payroll and therefore are employees, but they take care of their own licensing and maintenance. This practice sometimes avoids transportation taxes, but payroll tax liabilities are then incurred.

Another compromise is to own the minor equipment and either rent or subcontract to secure the major items. Still another is to own the major equipment and to accept only subcontract jobs where that type of equipment is required.

Very little equipment is rented on an "operated and maintained" basis. Usually, if an operator is to be furnished, it is safer, from the standpoint of compensation insurance if nothing else, for the contractor to put the operators on his own payroll and rent the equipment "bare."

It has been pointed out that the construction contractor is in a peculiar position relative to ownership of his work in process. Most of this work consists of improving the real property of others, and as soon as the work is done, legal title to it vests in the owner of the realty. To protect the contractor, the federal government and all states (but not all foreign governments) have lien laws or bond acts to provide, as security, the power to seize the property improved, or in lieu of such seizure, a claim against the contractor's bond. The lien laws provide for a statutory procedure to place a lien on the real property improved or (as in government contracts) to provide a solvent bondsman to whom the laborer or materialman may turn in the event he cannot collect from the person with whom he has contracted.

Most of these lien laws and bond acts refer to "labor" and "material" as the items secured. Nevertheless, the Federal Bond Act of 1935 (Miller Act) and most, if not all, of the state laws, also include equipment rentals among the items covered so long as the equipment is used directly at the job site or is otherwise connected with the work in some fashion direct enough to come within the language of the particular statute. However, equipment rented to a materialman who uses it to load or process materials would not, under most statutes, be covered.

Equipment problems in joint ventures

A joint venture, like any other organization which has contracted to do a construction job, may either buy its equipment or rent it. As long as it rents from some third party there are no problems peculiar to joint venture equipment. As soon as it rents equipment from one of the members of the venture, questions of rental rates and repair and maintenance policy arise. As soon as it purchases equipment the question of ultimate disposal is raised, and if the purchase is made from a member of the venture the additional questions of price and condition arise. It is not uncommon to hear a contractor remark that he "got the joint venture" to put his equipment "in good shape."

Needless to say, it is most important that joint venture agreements deal in detail with the questions just raised. It is outside the scope of this book to discuss in detail the contents of joint venture agreements, but it is appropriate to point out the trouble spots from an accounting viewpoint. Accordingly, Schedule 10.3 is included as a checklist of the accounting aspects of equipment provisions in a joint venture agreement.

SCHEDULE 10.3/CHECKLIST OF EQUIPMENT PROVISIONS OF A JOINT VENTURE AGREEMENT

1. Is there a schedule of rental rates to be charged by members to the venture for equipment rented to it?
2. Does the schedule, if present, provide for additional rentals for special attachments or devices?

SCHEDULE 10.3/CHECKLIST OF EQUIPMENT PROVISIONS (Cont.)

3. Does the agreement define ordinary repairs and maintenance for which the venture must pay, and extraordinary repairs which may be charged back to the owner? A system of repair orders (Fig. 10.10, 10.11) is virtually indispensable if the job is to handle its own repairs.
4. Does the agreement include special rates for use of the equipment on more than one shift?
5. Does the agreement specify who is to pay for transportation to and from the job and what happens when the equipment is to be brought from or shipped to a point unusually distant from the job site?
6. Does the agreement specify when rentals are to begin, when they are to end and whether they are to continue during periods when the equipment is in the shop or during delays due to weather, strikes, and so on?
7. May the job refuse to accept from a venturer equipment that is in poor condition on arrival? How is condition to be determined?
8. How is joint-venture-owned equipment to be handled on the venture books, and how is it to be valued at the end of the venture? Particularly, how fast is it to be written off?
9. Will members of the venture have the first chance to buy it? If so, at what price, and who has the preference if more than one member of the venture wants to buy the same piece of equipment?
10. If equipment is to be transferred to another venture between the same parties, at what value is the transfer to be made?

If these ten questions are discussed and answered in advance there will be few arguments about joint venture equipment that cannot be settled by reference to the agreement. On the other hand, no agreement, however carefully discussed and drafted, can take the place of fair dealing between the parties. This is especially true of agreements on joint venture equipment.

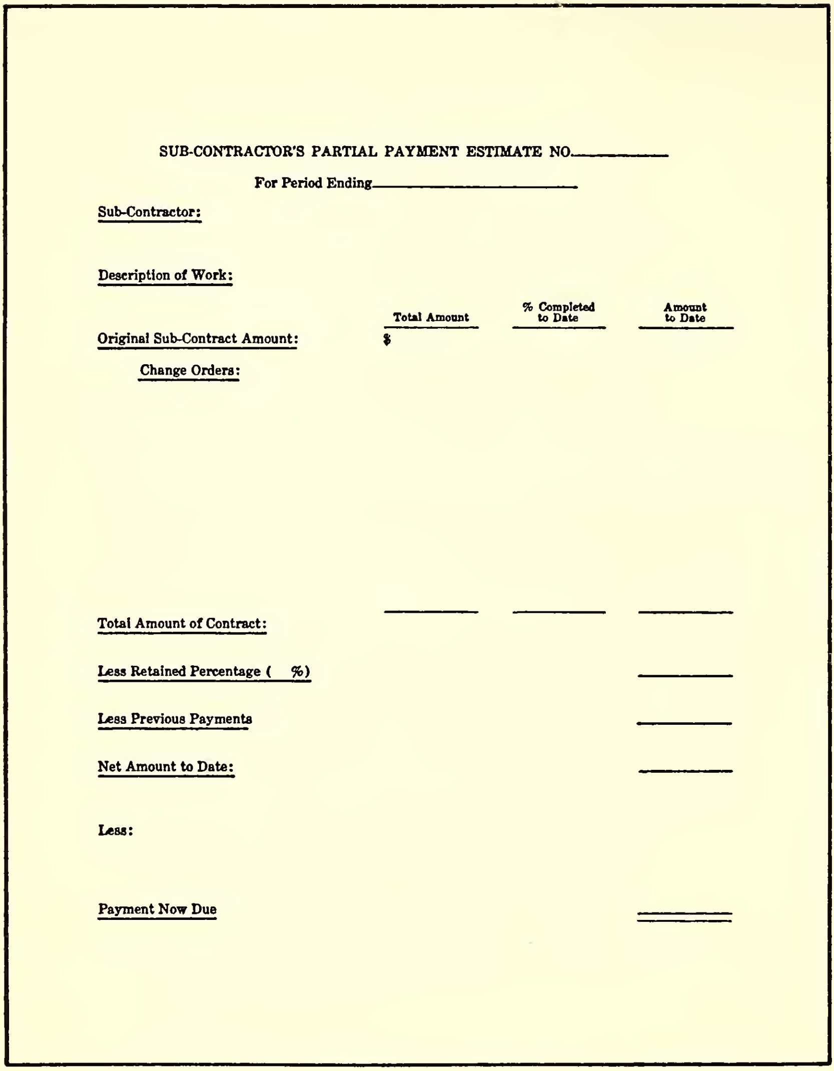
11

Accounting for Subcontract Costs

It might appear that, once the subcontract (Chap. 6) is let, there are few, if any, problems in accounting for the costs. In large measure, this statement is true. On very small jobs the subcontractor renders his bill at the end of the job and the cost is accounted for in that period. If subcontracting is on a cost-plus basis the subcontractor submits periodic billings for his costs and fee, and again the costs are accounted for in the period when billing takes place. If jobs cover a longer period and involve progress billings, retained percentages, change orders, and special work or services, or if there are second- and third-tier subcontractors, job site security regulations, or labor problems, accounting procedures must be broadened to meet the broader needs.

Progress billings

If subcontractor progress billings are based on a percentage of completion it is usual for the prime contractor's job engineer and the subcontractor or his superintendent jointly to estimate the percentage of completion and agree on the amount to be billed by the subcontractor. Such progress estimates may be summarized on special forms (Fig. 6.2, Fig. 11.1).



SUB-CONTRACTOR'S PARTIAL PAYMENT ESTIMATE NO.__________

For Period Ending____________________

Sub-Contractor:

Description of Work:

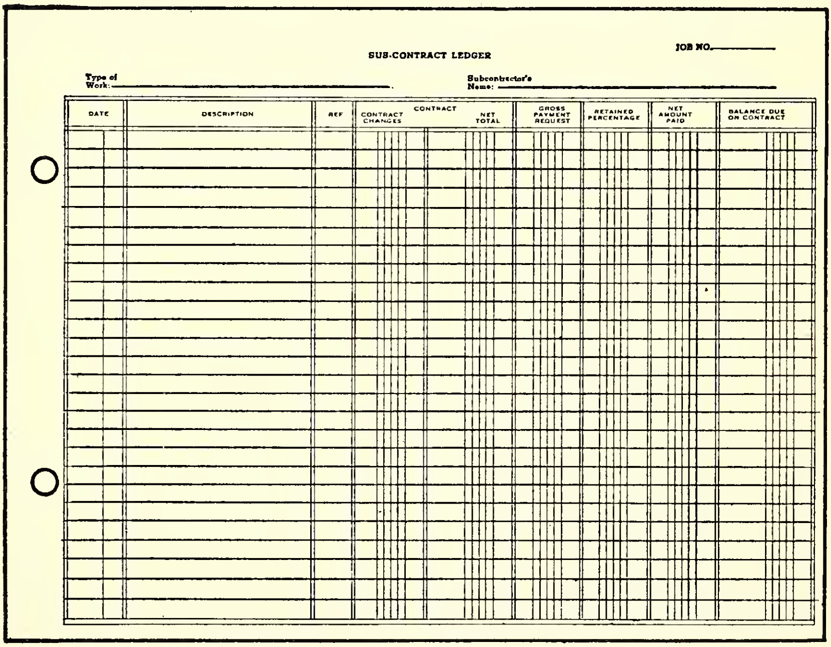
	Total Amount	% Completed to Date	Amount to Date
Original Sub-Contract Amount:	$		
Change Orders:			
Total Amount of Contract:			
Less Retained Percentage (%)			
Less Previous Payments			
Net Amount to Date:			
Less:			
Payment Now Due			

Fig. 11.1 Payment estimate

Figure 6.2 shows one form of subcontractor payment estimate. This is another form, designed to be either typed or handwritten.

Sometimes, instead of periodic estimates based on percentage of completion, the subcontract will call for estimates to be submitted at a particular stage of completion. For example, a plumber might bill one-third of his contract price when the rough plumbing is in, one-third when the finish plumbing is in and the fixtures are set, and the balance 35 days after final inspection and test. This is just another way of arriving at percentage of completion and when the job is not too long it is reasonably satisfactory. On the longer jobs, however, periodic billings based on progress are generally preferable. In either event, the same general type of summary is needeed to support the entry debiting the general ledger account with "Work in progress" and crediting a liability account for "Amounts due subcontractors" on the prime contractor's books.

The subcontractor's ledger sheet (Fig. 11.2) is used in a subsidiary



SUB-CONTRACT LEDGER

JOB NO.________

Type of Work:________ Subcontractor's Name:________

DATE	DESCRIPTION	REF	CONTRACT		GROSS PAYMENT REQUEST	RETAINED PERCENTAGE	NET AMOUNT PAID	BALANCE DUE ON CONTRACT
			CONTRACT CHANGES	NET TOTAL				

Fig. 11.2 Subcontractor's ledger

A special variety of accounts payable ledger, this form is particularly useful: when there are numerous subcontracts; when these constitute an important part of job costs; and when the amounts owed are important in the contractor's balance sheet.

ledger controlled by the "Subcontract cost" column in the "Work in progress" account and by the account "Amounts due subcontractors—Retained percentages." Other columns in the subcontractor's ledger are set up to give a summary of the subcontracts let and the amounts remaining to be paid on them. This last information can be useful at two different points. First, when the engineer is making his periodic estimate of cost to complete he can refer quickly to the relative stage of completion of each subcontractor. Second, if either the subcontractor or the prime contractor is "unbalancing" the subcontract payment requests, any serious discrepancies between physical progress and dollar payments is more easily noticed. Normally, there will be a tendency for the subcontractor to unbalance in favor of overpayments while the tendency of the prime contractor will be to unbalance in favor of underpayment. Usually the two just about offset each other, but when the payments get out of proportion to physical progress, the records should call attention to that fact. Another factor for which both the partial payment estimate form (Fig. 11.1) and the subcontractor's ledger form (Fig. 11.2) make provision is the change order. Even on relatively small jobs change orders frequently change the contract amount and must be taken into consideration as the job progresses. Occasionally, change orders are taken into account as separate work orders, but the generally preferable procedure is to make them a part of the subcontract itself.

Retained percentages

When a subcontractor bills the prime contractor for a progress payment, construction cost is charged for the full amount. The contra credit is divided between an account called "Amounts due to subcontractors—Current" and another called "Amounts due to subcontractors—Retained percentages." It is the latter account that controls the "Retained percentages" column in the subcontractor's ledger.

The payment of the retained percentages must be made strictly in accordance with the subcontract agreement. Otherwise there is a possibility that the subcontractor's surety (if he has one) may be released.

A subcontractor, quite naturally, wants his retained percentage released as soon as possible after he has finished his work and, wherever possible, he will seek to have provision made in the subcontract agreement to that effect.

The prime contractor, on the other hand, will try to keep the subcontractor's retention until the whole job is completed. There are several reasons for this effort. First, the prime contractor will not, as a rule, receive his retention until the end of the job. Second, many owners and architects reserve the right of final inspection at the completion of the whole job and if something goes wrong with the subcontractor's work between the end of the subcontract job and the final completion inspection, there is no security for correcting the work. If the prime contractor's policy calls for early release of subcontractor retentions, it might well be necessary, from a conservative accounting viewpoint, to provide a reserve for such losses.

Backcharges

One of the most persistent problems of accounting for subcontract costs is that of controlling backcharges. A subcontractor needs a piece of equipment for an hour or so. The prime contractor's superintendent supplies it. In theory, when the equipment time is reported, the time worked for the subcontractor will show up. The contractor will charge the subcontractor's account and it will be deducted from his next progress payment.

In practice it may be handled differently. The contractor's superintendent may say to the subcontractor:

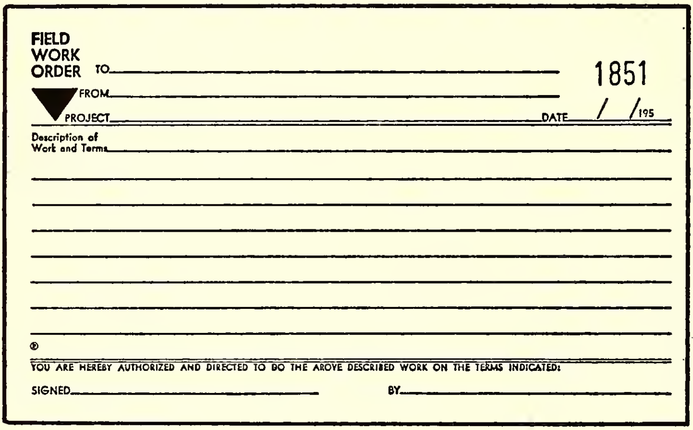
"Okay! I'll send the equipment over, but how about having your gang repair those places where the carpenters damaged your work, and we'll call it even?

If this sort of exchange goes on very much there is a better-than-even chance that after a few months there will be an argument about disputed backcharges. Regardless of the outcome each company will feel that it has been cheated.

This observation definitely does not mean that prime contractors should furnish nothing to subcontractors or vice versa. It simply means that nothing should be done without written authorization. In the example above the subcontractor's representative should have given the contractor a written order for the equipment and the contractor's superintendent should have given a like order to the subcontractor.

The excuse for failing to observe these formalities is that by the time a formal order is written up and signed the work is done and forgotten about. That is usually the trouble. It is forgotten about until the time of the subcontractor's men and of the contractor's equipment is recorded. Then the books of both companies show an open charge. The prime contractor is in a position to collect by offsetting the charge against the progress payment, and when he does, the argument starts.

There is really no excuse for such a result. The formalities are extremely simple. The contractor's superintendent can easily carry in his pocket, or in the glove compartment of his pickup truck, a pad of field work order forms (Fig. 11.3). The forms are in triplicate and padded with one-time carbons. When an agreement is reached or the order is given it takes only a few seconds to record it, give one copy to the superintendent, one to the subcontractor's representative, and leave one in the book for audit. If subcontractors clearly understand that no work will be paid for without such an authorization and if superintendents and project managers are held strictly accountable for work done without authority there should be no problems on chargebacks. In other words, there should be no recognition of oral instructions nor of oral deals.



FIELD
WORK
ORDER TO
1851
FROM
PROJECT DATE / /195
Description of
Work and Terms
®
YOU ARE HEREBY AUTHORIZED AND DIRECTED TO DO THE ABOVE DESCRIBED WORK ON THE TERMS INDICATED:
SIGNED BY

Fig. 11.3 Field work order

This form was designed to make it easy to reduce agreements between the prime contractor and subcontractors to writing, and thus prevent the disputes that arise from oral instructions and unrecorded "deals."

Special services to subcontractors

Lending labor to subcontractors or others is a practice that deserves special mention because of the accompanying hazards. It usually happens in one of two ways. A subcontractor's men may be carried on the prime contractor's payroll or men on the prime contractor's payroll may be assigned to work for the subcontractor.

In either situation an industrial injury may subject the employer to liabilities which he never intended to accept, including liability beyond the coverage of workmen's compensation insurance. An even greater risk for the prime contractor is involved because he is responsible for the work of all men on his payroll. Thus the prime contractor may be relieving the subcontractor of responsibilities that the subcontractor should rightfully assume.

Often a prime contractor may find it necessary or desirable to provide subcontractors with such services as hoisting, mess hall, employee transportation, or housing. If some such service is to be rendered, it should be mentioned in the subcontract. Arrangements made either to offset the cost against progress payments, or to collect it separately, should be clearly spelled out in the subcontract unless, of course, such services or facilities are to be provided to the subcontractor without charge by the prime contractor.

Often when camp, mess hall, and commissary services are involved, collection can be made directly from the subcontractors' employees. Otherwise accounting procedures must allow for keeping records of the charges to be made. Thus if hoisting services are provided for a building, the hoist operator should keep a record of each lift. Usually a simple mimeographed sheet can be devised for such a record.

Second- and third-tier subcontracts

In accounting for the costs of second- and third-tier subcontracts, a subcontractor has the same problems and meets them in the same way as a prime contractor. However, as the contracts get smaller there is an increasing tendency to treat them more like small installations or service jobs and less like subcontracts.

From the prime contractor's viewpoint, no special accounting recognition need be given to second- and third-tier subcontracts. As a practical matter the prime contractor is responsible to the owner for their work, their conduct, and—what is even more serious—any liens that result from their activities, even though such liens may be guaranteed by the intervening subcontractor. If trouble brews and the subcontractor is unable or unwilling to cope with it, it may be up to the prime contractor's controller or office manager to take whatever steps are necessary to protect the owner and the prime contractor.

Security precautions

When a contractor has a job on some U.S. government installation where security restrictions are in effect, it is usually up to the contractor's job site office force to see that all men on the job are cleared. As a rule, if the security officer is cooperative, no serious problems are involved. It is necessary to see that the contractor's office personnel are fully briefed on the regulations and that the subcontractors are similarly informed. One common error is to fail to anticipate the arrival of new men who must be given security processing both at the government office and by the contractor before they can start to work. For example, a subcontractor, on whose performance the work of others depends, can hold up an entire job for half a day by sending out a crew that has not been cleared, for by the time the guard at the gate has called the security office to clear the newcomers an hour or so will have been lost and by the time a crew of from six to twelve men has been processed it will usually be too late to start work until after lunch.

Since it is usually necessary to coordinate each subcontractor's schedule with those of the prime contractor and other subcontractors, it is necessary to anticipate the arrival of subcontractors' crews. On jobs covered by security regulations the subcontractors will undoubtedly try to send to the job only men who have been cleared. If new men are to be sent, it is often possible to obtain their clearance a day in advance.

When the size of the job warrants it, a special security officer for the contractor can be a worthwhile addition to the field crew, but it is usual to see the security work handled by the job accountant. In any event security is usually under the jurisdiction of the job office manager.

In accounting for the cost of subcontracts to the prime contractor, there is a tendency to overlook the overhead occasioned by subcontract administration. How much of this kind of overhead there is will vary with the size, kind, location, and complexity of the jobs. The presence of a security problem may, in itself, increase the subcontract administrative cost to such a point that it is worth making an overhead cost allocation to subcontract costs. If such an allocation is already being made, the security cost may well be considered in establishing the rate or formula.

Labor relations

The cost of supervising labor relations may well affect the overhead charge allocated to subcontract costs. Large jobs usually have a combination personnel manager and labor relations director whose job it is to handle administrative-level labor relations matters. If jobs are small but numerous, such an employee may serve the entire company instead of just one job. When labor relations problems of the subcontractor affect the prime contractor, the prime contractor's labor relations man usually handles the first negotiations.

It is fairly common practice for a labor union to put pressure on a subcontractor by picketing the entire job of a prime contractor. If this policy is followed, the prime contractor may find himself in the position of either backing the union's demands against the subcontractor or taking part in negotiations on behalf of the subcontractor. In either event, costs are involved, and when they are substantial they should be distributed as a part of the job overhead properly applicable to subcontract costs.

12

Accounting for Overhead

Direct and overhead costs

The word "overhead" means cost that cannot be charged to an item of direct cost unless some more or less arbitrary basis is used. There are many other terms that mean the same thing, such as: indirect cost, distributable cost, job conditions, burden, other costs, and miscellaneous. If a cost is incurred in the general office on behalf of a single job, then it is not a part of general office overhead. It may become an item of job overhead, but in the general office it is a direct job cost. By whatever name such costs are called, they are basically what most accountants have come to know as overhead.

For example, a purchasing agent in the general office may charge to each job the time he spends buying for that job. So far as the general office is concerned, the chargeable time is direct cost. In the job accounts it is usually job overhead because rarely can a purchasing agent's time be clearly identified with some individual work item. The distinction made between general overhead and job overhead is a feature of construction accounting. In manufacturing, a similar distinction is recognized by segregating the general administrative and selling expenses from the overhead incurred in manufacturing. Among construction companies there is little uniformity in classification and treatment of these costs.

One of the reasons for the lack of sharp distinction between such costs is the fact that the same item may be either a direct or an overhead charge on the same job. For example, the first set of aerial photographs made for a particular job might be a direct charge to the cost of mapping the area. However, on the same job, the next aerial photographs may be for job progress pictures, a job overhead item, or to support claims for default by a subcontractor, another job overhead item, or to show to bankers or bondsmen in connection with a general credit application, a general overhead item.

These distinctions are not academic, even for the smallest contractor. For one thing, his policy in allocating overhead between years will affect his income tax. If he follows a policy that fails to match income with related costs, he will often find that, over a period of years, he is paying more income tax than he would if costs and income were properly matched. Thus, under a proper system of matching costs and revenue, a contractor who keeps his accounts by the completed contract method will charge into job costs all overhead that is directly applicable to jobs and such overhead will be a part of the costs for the year in which the job is closed.

If such overhead is included in the costs of a different year, the tendency will be for the high-profit years to be higher and the low-profit years to be lower. When this happens, the average rate tends to be higher because the good years, for individuals and smaller corporations, are taxed in a higher bracket.

It is true that for tax purposes the completed contract method is technically available only if the jobs last over one year. However, as a practical matter, this variation of the accrual method is used by a great many small contractors and is accepted without question for tax purposes because it reflects income more correctly than either the straight accrual method or the cash method.

For the very small contractor the most satisfactory segregation generally is to treat as overhead all costs and expenses except:

1. Labor performed at the job site, including a prorata share of payroll taxes and workmen's compensation insurance
2. Materials and supplies actually consumed on the jobs including sales and use taxes on them
3. Rental of equipment actually used on the job.

These items constitute direct costs, and the sum of direct costs is usually a very satisfactory basis for most small contractors to use in distributing overhead costs, regardless of where they are incurred. For

SCHEDULE 12.1/SMALL CONTRACTOR'S DIRECT COSTS

Job No.	*Labor*	*Materials*	*Equipment rentals*	*Total*
1	$ 375	$ 425	$ 60	$ 860
2	440	305	45	790
3	1,230	915	125	2,270
4	665	475	30	1,170
	$2,710	$2,120	$260	$5,090

SCHEDULE 12.2/SMALL CONTRACTOR'S OVERHEAD EXPENSES

Office salary	$ 300
Rent	75
Telephone	30
Stationery and office supplies	45
Postage	20
Repairs and maintenance	92
Small tools and supplies	107
Insurance	120
Taxes	66
Depreciation	150
Other expenses	13
TOTAL	$1,018
Overhead distributed to jobs	1,018
BALANCE	$ -0-

example, a small building contractor who had four jobs in progress during a given month might have incurred direct costs during the month as shown in Schedule 12.1. His overhead expenses would be as shown in Schedule 12.2.

The total overhead costs of the month ($1,018) are 20 per cent of the total direct costs incurred during the month. Therefore a journal entry debiting a general ledger account called "Job costs" and crediting another general ledger account called "Overhead distributed to jobs" would effectively charge each job with its proportionate share of the overhead for the month. The entry is shown in Schedule 12.3.

Note that, because of the size of the operation in this example, there is no segregation of general office and job site overhead. Note also that for cost accounting purposes, payroll taxes and insurance on direct labor, and sales and use taxes on materials and job supplies, are considered as direct costs.

SCHEDULE 12.3/JOURNAL ENTRY DISTRIBUTING OVERHEAD

Job Costs	$1,018	
Overhead charges to jobs		$1,018
To distribute overhead for the month of ——————.		

Cost ledger detail:

Job	*Direct costs*	*Overhead*
1	$ 860	$ 172
2	790	158
3	2,270	454
4	1,170	234
	$5,090	$1,018

Essentially the same principle of distribution must be followed regardless of the size of the operation, at least insofar as job site overhead is concerned. However, as operations increase in size and complexity, so also do the problems of overhead distribution.

Such problems arise, for example, when the contractor acquires a warehouse and a yard, or establishes various service departments, such as estimating, engineering, purchasing, personnel, and machine shop. Like the warehouse and yard, each of these departments serves the jobs and, under the best accounting treatment, each job is charged for the cost of services rendered to it.

Nevertheless, when service departments become involved, it is sometimes necessary to charge their costs out on the basis of standard rates instead of the simple distribution shown in Schedule 12.3. The result is overabsorption or underabsorption (usually the latter) of these costs, and the differences, together with a number of general office costs which cannot be passed on to the jobs, then become a separate class of overhead commonly referred to as "general office overhead" or some similar name to distinguish it from the overhead costs which are chargeable directly to the jobs.

One of the most controversial of the general office charges to the jobs is that sometimes made for bidding expense. The statement is made that the cost is clearly incurred for the benefit of the job and that therefore the job should bear it. However, the same argument could be advanced on behalf of charging all bidding expenses to the jobs since if there were no bidding there would be no jobs and thus the successful bids must carry the cost of the unsuccessful ones.

The fallacy of this theory is demonstrated when a company submits a long series of unsuccessful bids and attempts to burden a single active job with the entire bidding cost. The result is a totally unrealistic figure for both job overhead and general overhead. The unit cost figures become useless and the expense incurred in keeping them is wasted. Actually, underabsorbed general overhead is roughly comparable to idle plant capacity, and from a management viewpoint both call for about the same treatment.

Closely related to the bidding expense problem is that of promotional expense and institutional advertising. These, along with expense accounts of top executives, are essentially general overhead costs and should be treated as such.

Another controversial issue arises in some companies (particularly those in which job accounts are decentralized) when the jobs are charged a flat percentage of their gross billings to cover general office overhead, plus interest at a fixed rate on the funds advanced to finance the job. This system has the merit of passing a reasonable proportion of the general office overhead to the jobs and thus keeping before management the fact that the income from jobs is not net income but must bear its share of general office expense. Skillfully handled, this method of accounting can provide a realistic basis for measuring the effectiveness of departmental management. In other words, if a service department can recover all or substantially all of its costs by charges to the jobs, and still not charge the jobs more than would have to be paid to an outsider for the same work, then the service department is proving its worth by competing successfully with outside business. But if a service department is unable to meet or beat the prices charged by outside suppliers for the same services, it may be more profitable to discontinue that department. When control of this kind can be established by charging general office overhead to the jobs, there is a great deal to be said for the practice.

However, with a captive market and a paper record to make for himself, an unscrupulous department head can use the interdepartmental charges to bury his own inefficiencies until the latter become so flagrant that they cause complaints from the jobs. Besides, top management (unless it happens to be unusually accounting minded) may confuse these internal charges with outside income and then wonder why the job profits are so low. Worst of all, too few bankers or bonding companies understand the accounting procedures of their contractor clients well enough to recognize transfers of head office overhead for what they are and to evaluate them accordingly. Too often they will look upon them as "trick" accounting devices designed to confuse and deceive. When this misunderstanding occurs, the internal charges will have done more harm than good.

No discussion of the items includible in job overhead would be complete without mention of temporary structures. Like the cost of equipment move-in and move-out, and setting up shops, batch plants and similar service activities, the cost of temporary roads, buildings, bridges, and so on must be written off against the job. But equipment move-in and move-out is distributed by adding a factor to the hourly equipment rate. Shops charge off their setup and dismantling costs by adding a percentage to their labor charges. Batch plants cover their cost of setup and dismantling by adding a few cents to the cost of each yard of material processed.

Temporary structures, on the other hand, must be included in job overhead and written off against the cost of the whole job. Usually, either total direct cost or total man-hours proves to be the most satisfactory basis for allocation.

The fact that all the items mentioned are usually treated as deferred charges on the job books does not change their essential nature. They are indirect costs that must be written off. However, on most of the larger construction jobs, and in companies where cost keeping is recognized as an important activity, most of these charges find their way into direct cost, leaving only the temporary structures to be treated as straight overhead items.

For maximum usefulness, any methods used to account for overhead costs should be consistent and comparable. The real value of any cost record is that it can be compared with some standard. Past performance can be a good standard as long as it is not regarded as infallible, and as long as sizable variations, favorable or not, are explained. When such departures from past performance are explained, efforts can be made to reproduce conditions that resulted in savings. Eventually, something approaching a standard rate or a group of standard rates may be developed.

Whether such standard overhead rates are safe to use in bidding is debatable. They represent an average of figures that are both higher and lower, and it is argued that when they are too high they cause the company to lose jobs, and that when they are too low the bids may lose money. Still, all bids are estimates, and past experience is often the best possible guide. In any event, even if they are not used directly, the overhead averages may serve as a check on the estimator's thinking.

Distribution methods

Overhead is inherently indirect and must therefore be distributed to the work items or production cost accounts on some more or less arbitrary basis. For some costs (batch plant, shop, equipment overhead) the basis is obvious. However, there are many diverse costs, such as mess hall and camp losses, gasoline for the superintendent's pickup truck, and premiums on performance and payment bonds, that cannot be charged into direct expense by any reasonable method, and for which there is no obvious basis whereby they are to be allocated to the various work items. If these costs are charged into job cost as they are incurred (as they often are), the job costs are distorted in two ways. First, the job appears to lose money in the early stages and then to recoup the losses later on. Second, the costs are usually distributed to those work items that are active at the time they are incurred, instead of to those that are actually benefited. While all these costs must be charged to the job in the long run, it is not hard to see that if such large items as surety bond premiums and temporary structures are charged directly to cost instead of being written off over the life of the job, the cost accounts in the early stages of the job would be seriously distorted, and the progress figures would be virtually meaningless.

One way of distributing these costs is to defer them, and to take them into job costs on the basis of the percentage of completion determined each month by the job engineer when he prepares his progress estimates. If, for example, at the end of the month, the engineer estimates the job is 47 per cent completed, the amount of overhead written off that month would be such as to make the total write-off to date equal to 47 per cent of the total overhead estimated for the whole job.

Since percentages of completion will usually be computed on individual work items, overhead costs will be distributed to the latter. Thus each work item (job cost account) is charged with enough of the overhead to maintain a constant ratio of overhead to direct cost.

This method has the disadvantage of requiring constant adjustments. Often overhead charges are shifted between work items when there are no changes in the direct costs charged to them. Still, for the most part, the results are reasonably sound. Occasionally this method is criticised for being based on revenue instead of on cost—a criticism that is often justified.

There are some strong arguments against the use of total direct cost as a measure of overhead distribution. It is claimed that subcontract costs should not be burdened with the same percentage of overhead expenditure as work done by the contractor's own forces. It is also claimed that by including direct material in the base for overhead distribution, the ratio can easily be distorted by inclusion of large, expensive units such as steam turbines, generators, or chemical processing installations. On the other hand, it could hardly be argued that subcontracts or costly direct materials should bear no overhead at all, although that would be the result if only direct labor cost or direct labor hours were used.

The theoretically correct answer to this question of construction costs lies (as for manufacturing costs) in allocating various types of overhead on different bases and in selecting those bases according to the needs of the particular company. For most construction companies, however, there are two serious practical objections to this answer. First, relatively few construction companies have developed the use of construction cost figures to such a point that the cost of using multiple bases for allocating overhead would be justified. Second, the wider variations in individual jobs encountered by construction companies pose allocation problems rarely present in a manufacturing operation.

For example, assume the company had decided what items of overhead were to be allocated to subcontract costs and then assume the company were awarded these four jobs:

1. A harbor development job for which the bulk of the cost is covered by a single subcontract for the dredging
2. A large office building with many small subcontracts
3. A steam-powered electric generating plant for which a large portion of the cost is distributed among two or three large equipment installation contracts on which most of the cost is for equipment
4. A pipeline job in which only a few small subcontracts are involved.

Clearly, any attempt to use the same allocation formula on each of the four jobs would result in serious distortion. Therefore, to be consistent, it would be necessary to vary the formula for each type of job. To do so is not impossible, but it is unlikely that the value of this procedure would justify its cost because the next job might well have its own peculiarities that would make all the other formulas inapplicable.

For this reason, a large part of the construction industry seems to prefer total direct cost as a basis for overhead distribution. It is simple and easy to use and, for most jobs, it is accurate enough to accomplish all that is required of it.

There is another approach widely accepted among construction accountants, particularly those who work with smaller firms—that no distribution of overhead should be made at all. They argue that, from the company's viewpoint, all costs which can be identified with a job are direct costs, and should be estimated and accounted for as such. If there is no direct relationship between an item of cost and a particular job, then it is misleading to allocate that cost.

Furthermore, these accountants point out, if indirect job costs are distributed to work items their identity tends to be lost and the individual items forgotten. By the same reasoning, if general office overhead is distributed, it too becomes harder to control. In estimating, they claim it is better merely to allow a percentage of the total direct cost to cover general office overhead. This procedure is certainly practical and possibly it is the one most likely to produce usable figures for the small contractor.

When overhead is to be distributed at all, it is probable that the most satisfactory method is the use of standard rates. Depending upon the way in which the company compiles its bids, the rates may be designed to be applied to total direct cost, direct labor cost, or direct labor hours. Which base is used is not so important as the consistency with which it is used. The standard rates may contain only items of job overhead, or they may contain an allocation of general overhead as well. If the rates are consistently applied they will generally reveal deviations from the average; and this is the basis for overhead control.

If the jobs last long enough and if standard rates are used to control overhead costs, it is usually necessary to distribute the overhead costs from month to month in order to obtain work item costs comparable with those in the estimate. If the jobs are relatively short and overhead distribution is not currently used, it is common to see job overhead, and sometimes an allocation of general overhead, applied in a lump figure in the cost ledger at the end of the job. When applied in this way, overhead allocations serve no purpose but to provide information for future bidding. If not used for this purpose the figures have no function at all and should not be kept.

Control of office overhead

The control of overhead, like the control of any other cost, must inevitably be based on the contribution of each item of cost to the final profits. There is no other standard that can be justified. This test is easier to state than to apply. Where should the line be drawn between the extremes of short-sighted penny pinching and open-handed waste?

One guide is the potential for mechanization. Whenever mechanical equipment can save man-hours, it is usually good economy to buy the equipment. Another is employee turnover. It costs money to change help, and when turnover is high it means that working conditions or salaries, and the methods of personnel selection may be deficient. When high-priced people are spending their time on low-priced routine jobs, it means that there are "too many chiefs and not enough Indians."

One commonly used and completely ineffective method of cutting down overhead in many offices is to fire all the clerical help and leave the "key" personnel. Of course, the bulk of the overhead continues; less work gets done; and in a short time the clerical help has to be replaced. In the end this method costs more than it saves.

Another favorite (and expensive) technique for cutting down general office overhead when job offices are decentralized is either to charge out all the general office costs to the jobs or to require the job offices to do some of the work formerly done in the general office. Of course the result of this policy is that job overhead is raised or the work does not get done. Sometimes both results follow. This technique may make the office manager in the general office look good for a while but it rarely saves any money.

It is not possible to state any rule for the control of overhead that will fit all companies. Still, the following principles should be generally useful:

1. The more overhead functions that can be brought together in one place, the easier it is to break them down into routine functions that can either be mechanized or performed by the least expensive help.

2. There needs to be someone who looks hard at every expenditure to see if it is justified in terms of its contribution to the final profit. This scrutiny includes a constant analysis of the jobs people are doing, the reports they are preparing, and the paper work going over every desk in every office.

3. Telephones are a mixed blessing. The more valuable an employee's time is, the more he needs to be isolated from unnecessary telephone calls.

4. Mistakes cost money. The time spent in job analysis to make each person's work check that of someone else is well spent. So also is time spent in staff training—that is, teaching people how to do their jobs accurately without loss of speed. Most of all, interruptions cause more mistakes than any other cause; reduce interruptions and you reduce overhead.

5. Nobody knows a job as well as the person who is doing it, recognition for time- and money-saving suggestions yields good results, but be sure the straw boss gets a pat on the back for the suggestions of people in his department. Otherwise, suggestion campaigns will die on the vine.

Controlling job site overhead

On very small jobs, job site overhead is negligible. As the jobs get larger, the ratio of indirect cost to total cost increases, and ultimately job site overhead become a problem. In general, the same methods suggested for control of general office overhead can also be used to hold job overhead to a minimum. However, the emphasis on preventing interruptions in the work of the project manager or superintendent, the job engineer, and the job accountant must be greater than ever. There will always be a host of details demanding attention, but the more they can be diverted from top personnel, the more time those individuals will have to concentrate on getting the job done quickly and with a minimum of delays and errors.

One way to prevent excessive interruptions of key personnel is to have adequate transportation on the job. It is poor economy for the superintendent to have to leave the job to pick up spare parts or supplies in town because he is the only person on the job with a company vehicle.

One of the most prolific sources of interruptions on the jobs is the general office employee who telephones the jobs for trivial reasons. Another equally prolific source of interruption is the steady stream of salesmen and miscellaneous visitors who ask to use the telephone in the job office. It is sometimes good economy to have only one telephone inside a job office and to have a pay telephone in a booth outside.

There is no money to be saved by equipping job offices poorly. If anything, job offices should have better equipment than the general office because the people who use it usually draw higher salaries than their clerical counterparts in the general office.

Accounting figures can be useful in the control of overhead if they are current enough to be significant and can be compared to some standard. However, the figures themselves do not control overhead. Control is a management function, and those who exercise it must be able to take the time to scrutinize the figures and to account for significant changes. Unless these steps are followed, the cost of compiling overhead data, either on the job or elsewhere, may be wasted.

Joint venture overhead

It has been pointed out elsewhere (Chap. 4) that the most efficient way to operate a joint venture is to have one of the members act as sponsor. When this method is followed the sponsor inevitably incurs overhead expenses in operating the joint venture. There are several ways of compensating for these expenses. One way is to allow, as a joint venture cost, a fixed allowance to cover overhead—sometimes stated as a flat monthly amount and sometimes as a percentage of contract volume. It is unusual for either of these methods to be entirely satisfactory. If charges are to be made it is better that they be made on the basis of time reports by employees and specific charges that can be audited if need be.

There are two common alternatives to the use of specific charges. First, the sponsor may be allowed a somewhat larger percentage of interest. Second, if the members are more or less regularly engaged in joint ventures together, it is common to see sponsorship rotated among the members so that no one company assumes a disproportionate share of the overhead cost.

Many of the difficulties occasioned by joint venture overhead arise because of failure to preplan the venture carefully enough. However, some problems always arise, and it is usually a wise plan to designate one individual in each organization to be the liaison between that company and the other members of the venture. This group is not in any sense a management committee since it does not interfere with the sponsor's management. It does serve as an advisory group to which the sponsor can refer special problems. If such a group exists it is usually the first to hear any complaints regarding joint venture overhead.

Such complaints usually come from one of three sources. Either the job is complaining because the sponsor's charges are too high; the sponsor is complaining because the costs exceed the reimbursement; or one of the nonsponsoring members is questioning the amount of the charges.

When the sponsor is billing for actual costs, the questions concern specific items. When a percentage of contract volume is used as a measure, or when a flat amount is charged, it is up to the sponsor to support with specific costs any claims that the allowance is inadequate. If the sponsorship is rotated or if the sponsor is allowed a larger percentage of participation, there would seem to be little ground for discussion of regular overhead items. The only remaining questions would involve the cost of things furnished or services performed outside the scope of ordinary overhead and for which special reimbursement is being requested. For such situations an informal liaison committee can be extremely useful.

Special overhead problems

Special overhead problems are occasioned by such items as move-in, move-out, cleanup, temporary structures, camp and mess hall losses, job completion overhead, overhead costs in connection with the guaranty provisions of the contract, standby charges during shutdowns due to strikes, weather, and other causes outside the contractor's control, and numerous other more or less special circumstances.

Some of these items have already been mentioned and a method of apportionment has been suggested. The others must be recognized and the job must be burdened with their costs. However, the wisdom of incorporating special or nonrecurring items in regular overhead distributions is questionable, to say the least. Generally, it is better to allow them to stand as special deductions in a separate section of the job operating statement, so that their true nature can be seen at a glance.

13

Vouchering and Disbursement Control

Disbursement control is the paper work a company does to make sure it does not buy anything it does not need and does not pay for anything it has not received. A good many of the relevant procedures have been described in earlier chapters. On a company-wide basis disbursement control starts with a cash forecast or a budget or at the job level with a "job estimate." In small companies it may begin with an estimated balance sheet as of some future date with an estimated income statement for the intervening period. Whatever form it may take, disbursement control starts with an estimate of how much money the company will have to spend, where it will come from, and what it will be spent for.

When applied to purchasing, disbursement control starts with the decision that some particular article is needed. In a large firm, there would normally be a written requisition followed by a purchase order bearing properly authorized signatures. In a very small firm the contractor might orginate and place the order himself. At either extreme, management is doing what it needs to do to prevent unnecessary buying, and to get the best possible quality, prices, and terms when it does buy. If these objectives are being accomplished then disbursement control is effective for purchasing.

When applied to receiving, disbursement control means a report to the person who pays the bills on each incoming shipment. That report should show exactly what was received, when it arrived and what condition it was in. It should also be possible to tell the number of the purchase order that authorized the supplier to ship the goods. As with most other accounting procedures, the routine will vary widely according to the size of the business and the nature of the work.

In the very small, one-man firm, the contractor himself does the purchasing, receiving, and paying, in addition to actually using the materials. His memory will provide most of the information. As the number of jobs and the number of transactions increase, the less he can rely on memory. As soon as more than one person is needed to do the work, it becomes necessary to substitute documents for personal knowledge. So, at the other extreme, the receiving routine of a very large contractor, with a great many employees and numerous jobs, would include a receiving report on which the warehouseman reports his independent check on merchandise received. If the shipment was not exactly as ordered, the warehouseman may also prepare an "over, short and damage" report.

As applied to financing, disbursement control means knowing where the money to pay the bills is coming from before the bills are incurred. It involves cash forecasting, and also following up on the forecast so that the money is actually in the bank when the checks paying the bills are written.

As applied to job management, disbursement control means not only checking the invoices, purchase orders, and receiving records carefully, but also staying within the job estimate. Any substantial differences between the job estimate and the actual cost should be accounted for in detail, since there may be some improper or unnecessary disbursements.

As applied to supplier and subcontractor relationships, disbursement control means two things. First, it means the usual follow-up on shipments and invoicing, and making sure that no incorrect bills are paid. Second, and equally important, is the prompt processing and payment of bills that are correct. This step involves not only the taking of all allowable discounts, but obtaining the price advantages that come with a reputation for prompt, accurate payments. Suppliers and subcontractors pay for their money like everyone else. If they know that their invoices will be promptly paid, they can afford to give better prices, terms, or service than if they have reason to believe their collections will be slow.

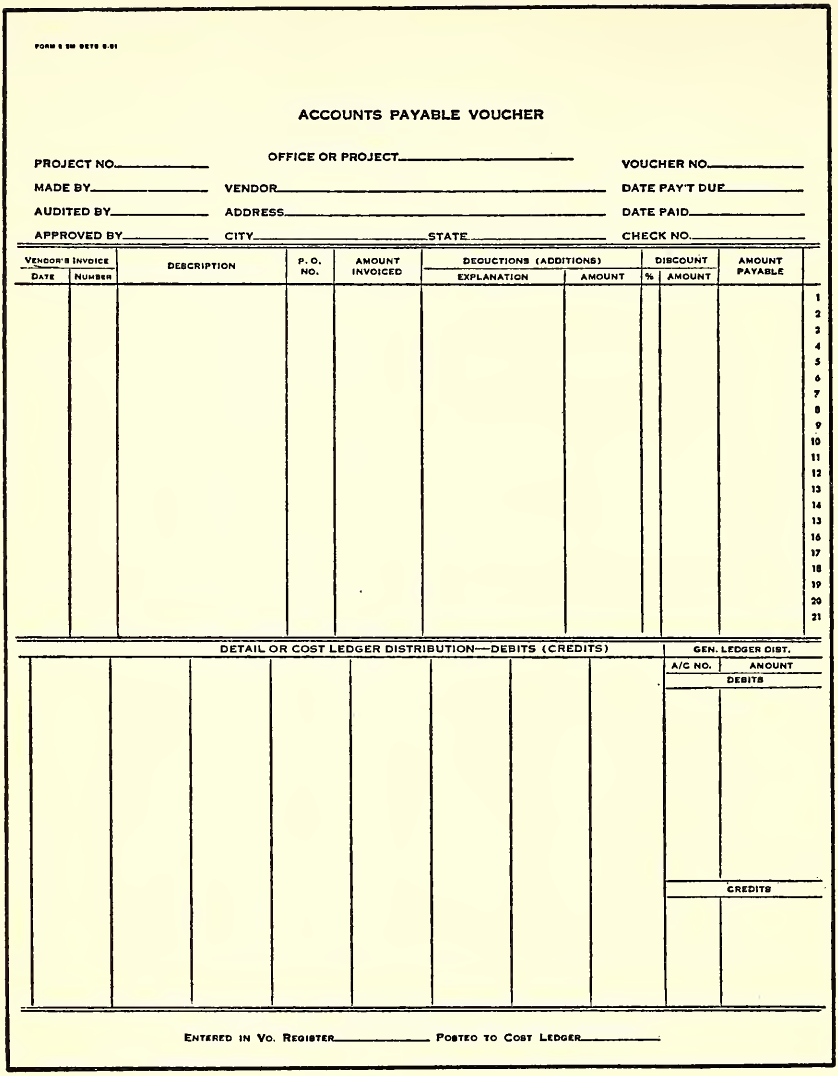
As applied to credit standing (closely related to the foregoing), disbursement control means the procedures established to make certain that all obligations are paid on or before the due date and strictly in accordance with their terms. These procedures include the cash forecasting, collection follow-up, and the financial planning necessary to cover payment, as well as processing invoices to assure prompt and accurate payment. Disbursement control also requires procedures for preventing errors and misunderstandings and for correcting or adjusting those that do occur.

One of the least-well-recognized aspects of disbursement control is its effect on job morale. Few experienced construction men will question the value of a spirit of cooperation and enthusiasm among the men on the job, and the feeling that they are a part of a top-drawer organization. A large part of that feeling is the pride that comes from the knowledge that the firm is important and respected in the community. One of the quickest ways to destroy that pride is to let the company get the reputation of being "slow pay." Slow or inaccurate payrolls can have the same result. This is not to say that the company needs to be "easy." A reputation for sloppiness can be just as bad as one for being slow. Prompt, accurate payments are a factor in developing the confidence essential to a reputation for strength and reliability. Such a reputation can contribute a great deal to job morale.

Support for disbursements

No matter where disbursement control starts for any particular company, it almost always utilizes some variation of the voucher system (Fig. 9.6). This is another way of saying that eventually all contractors learn that it pays to have the correct supporting documents before disbursing money. It also means that in most construction businesses an accounts payable ledger is unnecessary unless the company falls behind in paying its bills. A great many special forms (Fig. 13.1–13.4) are available for voucher system control. The mechanics of vouchering are affected by such things as the type of contract, accounting methods used by the company, and special job conditions, but the requisites of a good voucher are the same under any system In one way or another the documents should show:

1. Evidence that the goods or services were ordered on proper authority or that the cost was properly incurred
2. Evidence that the goods or services ordered were actually received
3. Evidence that the prices and discounts are correct
4. Evidence of authority to make the disbursement.



ACCOUNTS PAYABLE VOUCHER

PROJECT NO.________ OFFICE OR PROJECT________ VOUCHER NO.________

MADE BY________ VENDOR________ DATE PAY'T DUE________

AUDITED BY________ ADDRESS________ DATE PAID________

APPROVED BY________ CITY________ STATE________ CHECK NO.________

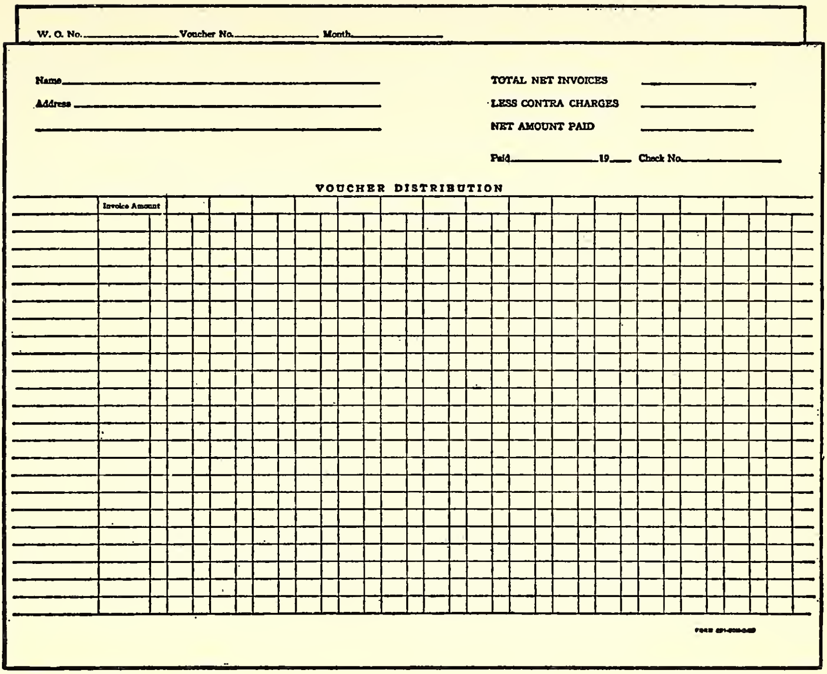
VENDOR'S INVOICE		DESCRIPTION	P. O. NO.	AMOUNT INVOICED	DEDUCTIONS (ADDITIONS)		DISCOUNT		AMOUNT PAYABLE	
DATE	NUMBER				EXPLANATION	AMOUNT	%	AMOUNT		
										1
										2
										3
										4
										5
										6
										7
										8
										9
										10
										11
										12
										13
										14
										15
										16
										17
										18
										19
										20
										21

DETAIL OR COST LEDGER DISTRIBUTION—DEBITS (CREDITS)								GEN. LEDGER DIST.	
								A/C NO.	AMOUNT
								DEBITS	
								CREDITS	

ENTERED IN VO. REGISTER________ POSTED TO COST LEDGER________

Fig. 13.1 Accounts payoble voucher

This is a simple voucher form suitable for a small contractor. Supporting documents are stapled to this form after it has been completed.



W. O. No.________ Voucher No.________ Month.________

Name________

Address________

____

TOTAL NET INVOICES ________

LESS CONTRA CHARGES ________

NET AMOUNT PAID ________

Paid________19____ Check No.________

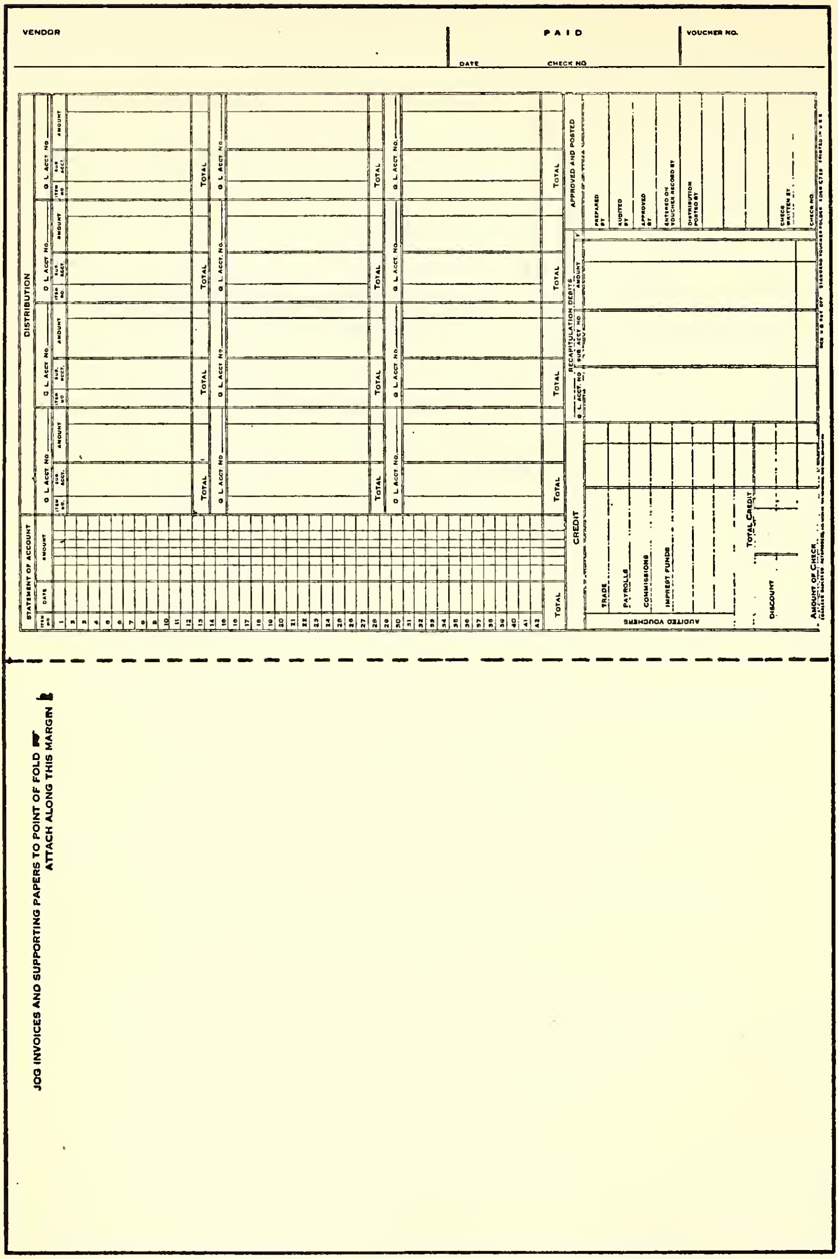
VOUCHER DISTRIBUTION

Invoice Amount

Fig. 13.2 Voucher envelope

One of the functions of vouchers is the assembling in one place of the various papers and documents supporting a transaction. A convenient way of accomplishing this end is to use a manila envelope for a voucher.

In its simplest form a voucher (used here to mean the documents supporting a cash disbursement) might consist only of two pieces of paper—a combination delivery ticket and invoice (Fig. 13.5), and a check. The invoice shows a delivery of materials to a job. It bears the signature of the man at the job site who received it. It shows the items delivered, the quantities, the prices, and the extensions. In a very small operation the contractor himself would check the invoices. He would know the job and recognize the kind and quantity of materials as being proper for the job. He might even remember the delivery, and there would be few enough deliveries so that any duplications would be noticed at once. Since the contractor himself probably made the purchase, he would know the prices quoted and be able to check them from memory. The extensions could be checked


VENDOR
PAID
DATE
CHECK NO
VOUCHER NO.
DISTRIBUTION
G L ACCT NO
ITEM NO
SUB ACCT
AMOUNT
TOTAL
STATEMENT OF ACCOUNT
DATE
AMOUNT
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
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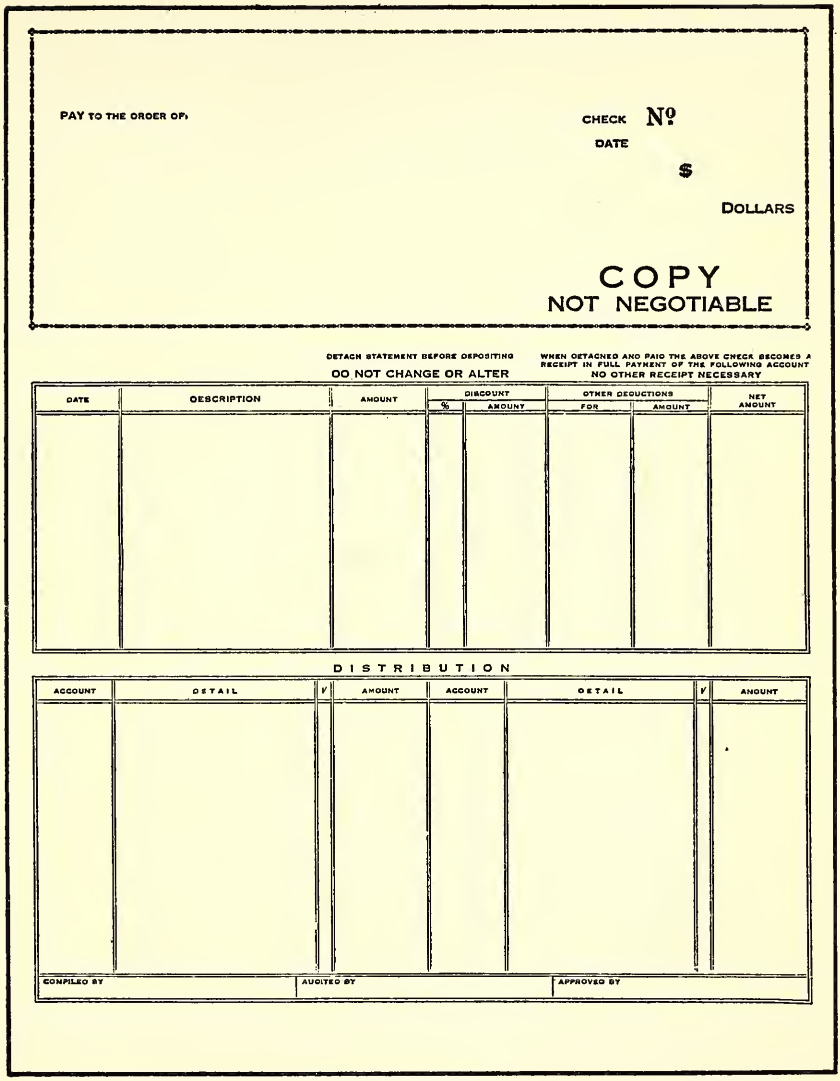
33
34
35
36
37
38
39
40
41
42
APPROVED AND POSTED
PREPARED BY
AUDITED BY
APPROVED BY
ENTERED ON VOUCHER RECORD BY
DISTRIBUTION POSTED BY
CHECK WRITTEN BY
CHECK NO.
RECAPITULATION DEBITS
G L ACCT NO
SUB ACCT NO
AMOUNT
CREDIT
TRADE
PAYROLLS
COMMISSIONS
IMPREST FUNDS
AUDITED VOUCHERS
TOTAL CREDIT
DISCOUNT
AMOUNT OF CHECK
JOG INVOICES AND SUPPORTING PAPERS TO POINT OF FOLD
ATTACH ALONG THIS MARGIN

Fig. 13.3 Accounts payable voucher folder

This voucher jacket, a standard form published by the Charles R. Hadley Co., is a file folder imprinted with spaces for analyzing the transactions with a particular vendor for the month. Supporting papers are stapled or fastened inside.



PAY TO THE ORDER OF:

CHECK №

DATE

$

DOLLARS

COPY
NOT NEGOTIABLE

DETACH STATEMENT BEFORE DEPOSITING
DO NOT CHANGE OR ALTER

WHEN DETACHED AND PAID THE ABOVE CHECK BECOMES A RECEIPT IN FULL PAYMENT OF THE FOLLOWING ACCOUNT
NO OTHER RECEIPT NECESSARY

DATE	DESCRIPTION	AMOUNT	DISCOUNT		OTHER DEDUCTIONS		NET AMOUNT
			%	AMOUNT	FOR	AMOUNT	

DISTRIBUTION

ACCOUNT	DETAIL	√	AMOUNT	ACCOUNT	DETAIL	√	AMOUNT

COMPILED BY

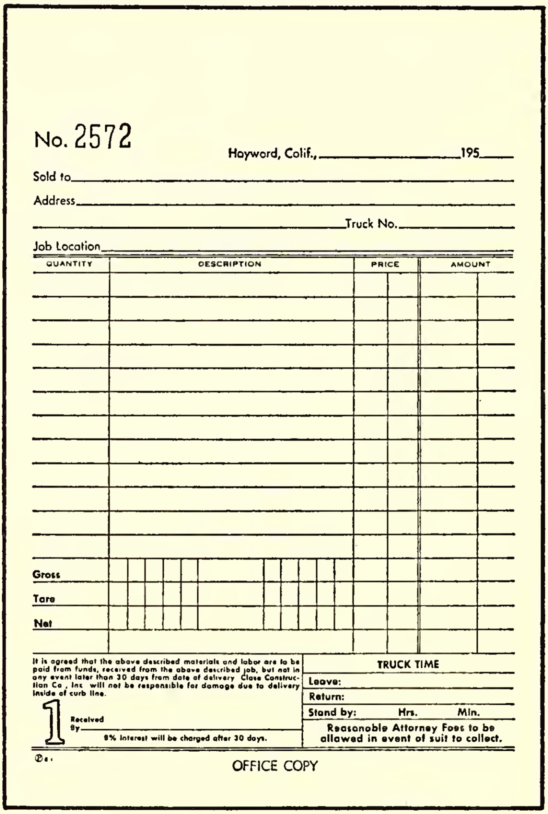
AUDITED BY

APPROVED BY

Fig. 13.4 Voucher check

The analysis of the payment is on the face of the check and the stub is used as a simple voucher. If a carbon copy is made, the copy can serve as a voucher and the stub as a remittance advice.

by recomputations or by simple inspection. When the contractor writes and signs the check, and puts his initial and the check number on the invoice, the documentation is complete and it remains only for the paid bill to be recorded and filed with the others for the month.



No. 2572 Hayward, Calif., 195

Sold to

Address

Truck No.

Job Location

QUANTITY	DESCRIPTION	PRICE	AMOUNT
Gross			
Tare			
Net			

It is agreed that the above described materials and labor are to be paid from funds, received from the above described job, but not in any event later than 30 days from date of delivery. Close Construction Co., Inc. will not be responsible for damage due to delivery inside of curb line.

1 Received By

8% Interest will be charged after 30 days.

TRUCK TIME

Leave:

Return:

Stand by: Hrs. Min.

Reasonable Attorney Fees to be allowed in event of suit to collect.

OFFICE COPY

Fig. 13.5 Combination delivery ticket and invoice

This snap-out form published by Moore Business Forms, Inc., has single-use carbon paper. The original is the office copy, the first copy is the invoice, and the second and third are delivery memoranda.

As the volume of transactions grows, and the work is divided among more people, the personal knowledge of the contractor is replaced by documentary evidence. As the size and need for accountability increase, so does the need for documents until, as, for example, on U.S.

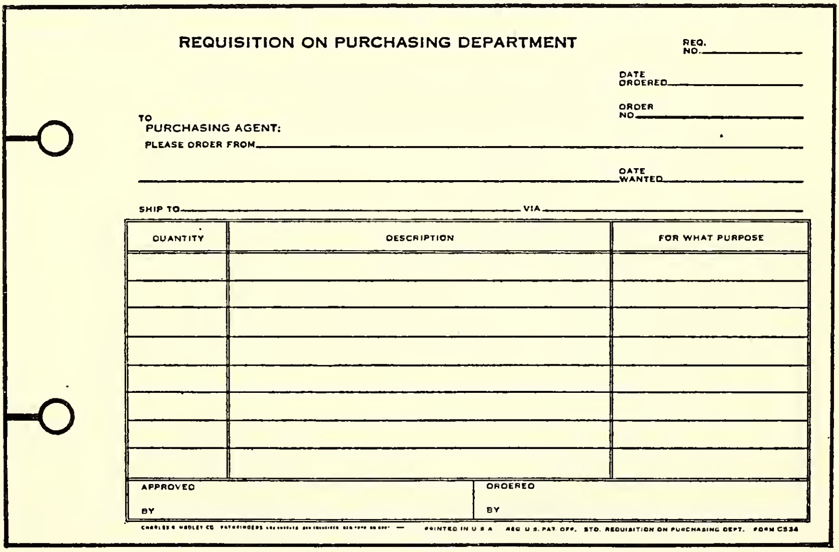
government cost-plus-fixed-fee contracts, every transaction, however small, must be documented in the most minute detail. Even so, the basic requirements are those stated above. The only variations are of degree.

In the discussions that follow, typical forms and procedures, although they have been tried and found satisfactory, are used as illustrations only.

Data for vouchering

The information for accounts payable vouchers comes from four principal sources:

1. Operating departments indicate the goods and services that are to be provided. These may or may not be documented by requisitions signed by authorized individuals depending upon who does the purchasing. If purchasing is done by a separate person or department, the buyer needs evidence of his authority to make the purchase and a signed requisition (Fig. 13.6) is the simplest and surest way to provide that evidence. A copy of the requisition sent to the voucher clerk in



REQUISITION ON PURCHASING DEPARTMENT

REQ. NO.

DATE ORDERED

ORDER NO.

TO PURCHASING AGENT:

PLEASE ORDER FROM

DATE WANTED

SHIP TO VIA

QUANTITY	DESCRIPTION	FOR WHAT PURPOSE

APPROVED BY	ORDERED BY

CHARLES R. HADLEY CO. PATHFINDERS [illegible] — PRINTED IN U S A REG U S. PAT OFF. STD. REQUISITION ON PURCHASING DEPT. FORM C534

Fig. 13.6 Purchase requisition

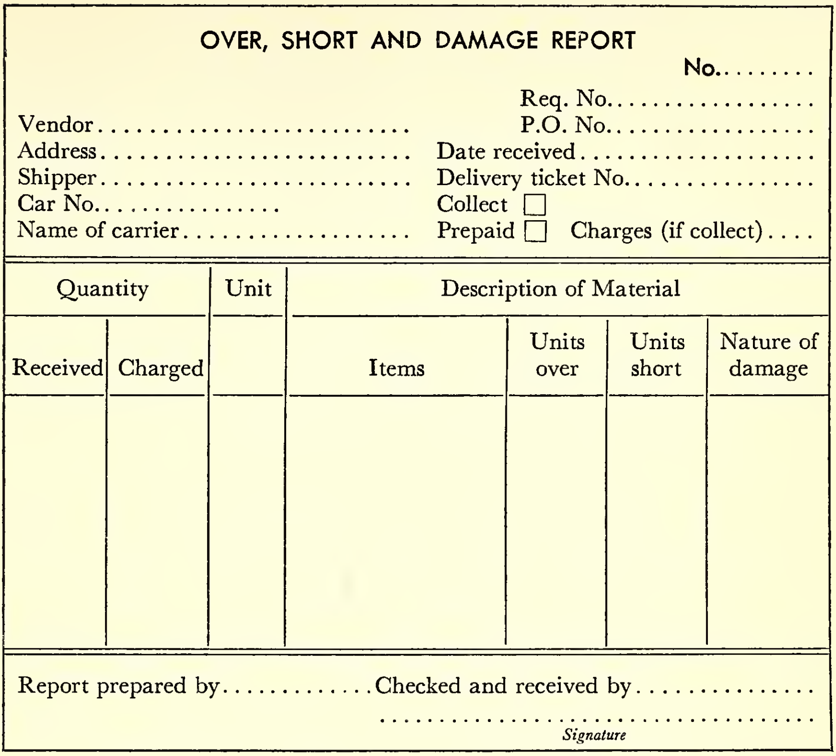
This is a simple form suitable for most contractors, published by Charles R. Hadley Co.

the accounting department gives the auditor the documentation he needs without going to the buyer's files.

2. The second basic document is the purchase order. Chapter 5 discusses its preparation in some detail and illustrates typical forms. In its most useful form, from the standpoint of documenting cash disbursements, the purchase order is priced and is sent to the vendor before the invoice arrives. In theory (and often in practice), it contains all the terms of the purchase including any special arrangements and understandings. It should be serially numbered and, among other things, should include all the instructions the seller will need to render his invoices in the required form. It should state clearly that all invoices must show the number of the purchase order authorizing the shipment. A copy of the purchase order should always go to the voucher clerk in the accounting department. In many systems, a copy of the purchase order is sent to the warehouse to serve as a receiving memo. This latter procedure is sometimes criticized on the ground that it creates a temptation for the warehouseman not to check the incoming shipments physically but merely to compare the delivery memo with the receiving copy of the purchase order.

3. From the project manager or the project engineer (or other person given the responsibility of checking them), come the vendors' invoices. They come in by mail and are sent to the operating department to be checked and coded for accounting distribution before being paid. Sometimes this step is bypassed, and they go directly to the voucher clerk for comparison of items, price, and accounting distribution with the purchase order, and notation of exceptions. When this method is followed, either the purchase order or the requisition must show the accounting distribution of the charges ("coding"). As indicated elsewhere (Chap. 5, 9), back orders are noted at once so that appropriate steps can be taken to avoid duplicate shipments.

4. From the warehouse, or from the point of delivery at the actual site of the work, come the documents evidencing receipt of the goods or services. These may take the form of a receiving report, a receiving copy of the purchase order, or sometimes just a copy of a delivery ticket signed by the person receiving the shipment. Whatever documents come in must show not only what was received, but what condition it was in. If there were "overages," "shortages," or damage to the goods received, an "over, short, or damaged" report (Fig. 13.7), should accompany the receiving memo so that the item can be reordered, if necessary, and so that proper insurance claims can be filed. When vendors' invoices first come in they should be stamped or otherwise identified so that only the original or the payment copy



OVER, SHORT AND DAMAGE REPORT

No.........

Req. No..................

Vendor..........................

P.O. No..................

Address..........................

Date received....................

Shipper..........................

Delivery ticket No................

Car No................

Collect ☐

Name of carrier...................

Prepaid ☐ Charges (if collect)....

Quantity		Unit	Description of Material			
Received	Charged		Items	Units over	Units short	Nature of damage

Report prepared by.............Checked and received by...............

....
Signature

Fig. 13.7 Typical "over, short, and damage" report

can form the basis for payment. Discrepancies between the purchase order, the receiving memorandum, and the invoice must be reconciled before an invoice is placed in line for payment. On subcontractor invoices the subcontract takes the place of the purchase order and the engineer's computations (Fig. 6.2) of the subcontract payment take the place of the receiving memo.

Preparation of vouchers

When all the documents are in and all discrepancies reconciled, the invoices to be paid and the discounts to be claimed are summarized on vouchers. It is at this point that an experienced voucher clerk can earn many times his cost, for it is he who must notice differences and exceptions and know which ones are important. For example, he must know whether charges for demurrage or waiting time on ready-mix concrete trucks are proper and authorized. He must know how to recognize partial shipments and how to catch and call attention to improper freight charges. He must know the difference between a freight bill and a bill of lading, and he must know when to deduct sales tax on the discounts he claims. He must watch the cash discount invoices and see that they are paid within the discount period and, most important of all, he must see that bills are paid promptly, correctly, and only once. The title "voucher clerk" is not very impressive, but it is no measure of the importance of the job in maintaining a smooth-running, economical operation.

Several different kinds of vouchers have been illustrated and some of them have been described in some detail. The actual preparation of most accounts payable vouchers starts with a vendors' alphabetical file in which the purchase orders, invoices, delivery memos, or receiving reports and correspondence affecting the vouchers are accumulated.

When an invoice, delivery memo, and purchase order are found in agreement, they are stapled together and placed in another alphabetical file with other invoices ready for payment. If partial deliveries are made against a single purchase order or purchase contract, that fact is noted on the face of the invoice and the purchase order is marked with the invoice number, date, and items shipped, and returned to the accumulation file. The invoice and delivery memo are checked, and after any errors have been corrected they are sent to the file of invoices to be paid. Blanket purchase orders or purchase orders issued against a purchase contract are treated like partial shipments in that the voucher clerk's copy is held in the file of unfilled orders until the invoice covering the last part of the order comes through for payment.

Some companies process invoices carrying cash discounts ahead of all others, and such an invoice is filed for final processing the day before payment is due. Other companies merely go through their "ready for payment" file once a week and pick out the discount invoices for immediate payment. Under this system the nondiscount items are allowed to accumulate until the end of the month when they are processed for payment by the due date, which is usually the tenth of the month following delivery.

Either at that time, or better yet, as the invoices are made ready for payment, they are entered on a voucher. Sometimes the voucher is a separate sheet of paper. With modern machine methods, the entry is often made on the carbonized remittance advice section (of which the voucher is the copy) of a voucher check. Whatever the mechanics of the system, as soon as the invoices to be paid are summarized on the voucher, and the supporting documents attached, the voucher is complete and ready for final checking and payment.

As a final precaution before preparing the check, it is a good idea to check the vouchers to see that all invoices are authorized for payment, and that all supporting documents are attached. At the same time, the amounts on the invoices and the amounts on the vouchers are compared for possible errors. The totals can be inspected for obvious errors. The vouchers themselves should be serially numbered and the number, if it cannot be the same as the check number, should appear somewhere on the check.

As a matter of good office practice each company should have its own vouchering procedures reduced to writing. These procedures must take into account that such items as utility and telephone bills come in only one copy with no delivery receipt. Subcontractor invoices must contain the engineer's computation in lieu of the delivery receipt. Depending on the system in use, invoices for equipment rentals may or may not have a copy of the equipment time report for the items included. In short, there will be a number of normal variations from the typical accounts payable pattern, and these variations and exceptions need to be covered by specific instructions. Special instructions are also needed for such items as freight bills, insurance reports, tax returns, rent on office or warehouse space, and similar items which often are not invoiced. The same would be true of payroll account and petty cash reimbursement vouchers. It almost goes without saying that where there is a need for petty cash expenditures, an "imprest" or revolving fund should be set up for a fixed amount, and reimbursed whenever it becomes low. The receipts for expenditures form the support for the petty cash voucher, which in turn supports the reimbursement check. Whenever possible, the petty cash fund should be kept in the office and not in the superintendent's pocket.

None of these special types of payment vouchers offers any unusual or complicated problems so long as they are recognized for what they are, and procedures in keeping with the needs of the company are set up to pay them when they fall due.

Voucher checks

When the voucher is complete, all the data necessary for the preparation of the check, including the serial number of the voucher appear on the voucher itself, and writing the check is reduced to mere copying. Three rules governing check writing, so obvious that they would hardly seem to need mentioning, are these:

1. No check should ever be drawn payable to cash.
2. No check should ever be prepared and sent through for signature without the name of the payee shown on the face.
3. No check should ever be presigned.

These rules are stated only because of the frequency with which they are broken. When they are not observed, an open invitation to theft exists, and an inference of collusion on the part of those who allow them to be ignored may arise.

One type of check (Fig. 13.4) has a voucher attached. When this kind of check is used it is common to use the same number for the voucher and the check. When the two numbers are different, both should appear on the voucher. The function of the voucher itself is to summarize the individual items or invoices paid and to show the accounting distribution. Usually, both a general ledger and a cost ledger distribution are shown (Fig. 9.6).

Unless cash balances are adequate to pay all bills currently, it is usually not practical to have the voucher number and the check number the same because there will be vouchers unpaid at the end of the accounting period, and this will tend to upset the numerical control of the checks. It is, of course, essential to maintain a strict numerical control on both the vouchers and the checks. If only the payment copy or original of each invoice, supported by original or payment copy documents, is included in the original voucher, and payment is made only on numerically controlled vouchers, all bills will be presented for payment, but it would be difficult for a bill to be paid more than once without attracting attention.

The practice of numbering checks serially and then accounting for all numbers is vital to any ordinary system of bank reconciliation which, in turn, is virtually indispensable to control of cash. Checks should always be printed with serial numbers, and all spoiled checks should be retained and accounted for. This principle seems so elementary that it hardly deserves mention. However, like the three rules stated above, it is violated often enough to justify stating it. If spoiled checks are thrown away or destroyed there is very little to prevent a dishonest employee from writing a check to himself, cashing it, and withdrawing the cancelled check from those returned with the bank statement. This would leave a shortage which could be concealed by omitting a check of like amount from the list of outstanding checks. This omission would not be too difficult if numerous checks are being written for the same amount as, for example, when a contractor is renting dump trucks from independent truckers.

The simplest way to maintain the numerical control in either series is to file them numerically and account for all missing numbers immediately.

After the vouchers and voucher checks are prepared, complete and ready for signature, they should be given a final scanning for proper documentary support, mathematical accuracy and general reasonableness. If a two-signature check is used, the first signer is usually the controller, office manager, auditor, or chief accountant, and his signature means the check and the supporting voucher have been preaudited and are technically correct. The countersignature by the general manager or one of his assistants (preferably an operations man) means that the general propriety of the transaction has been reviewed and approved.

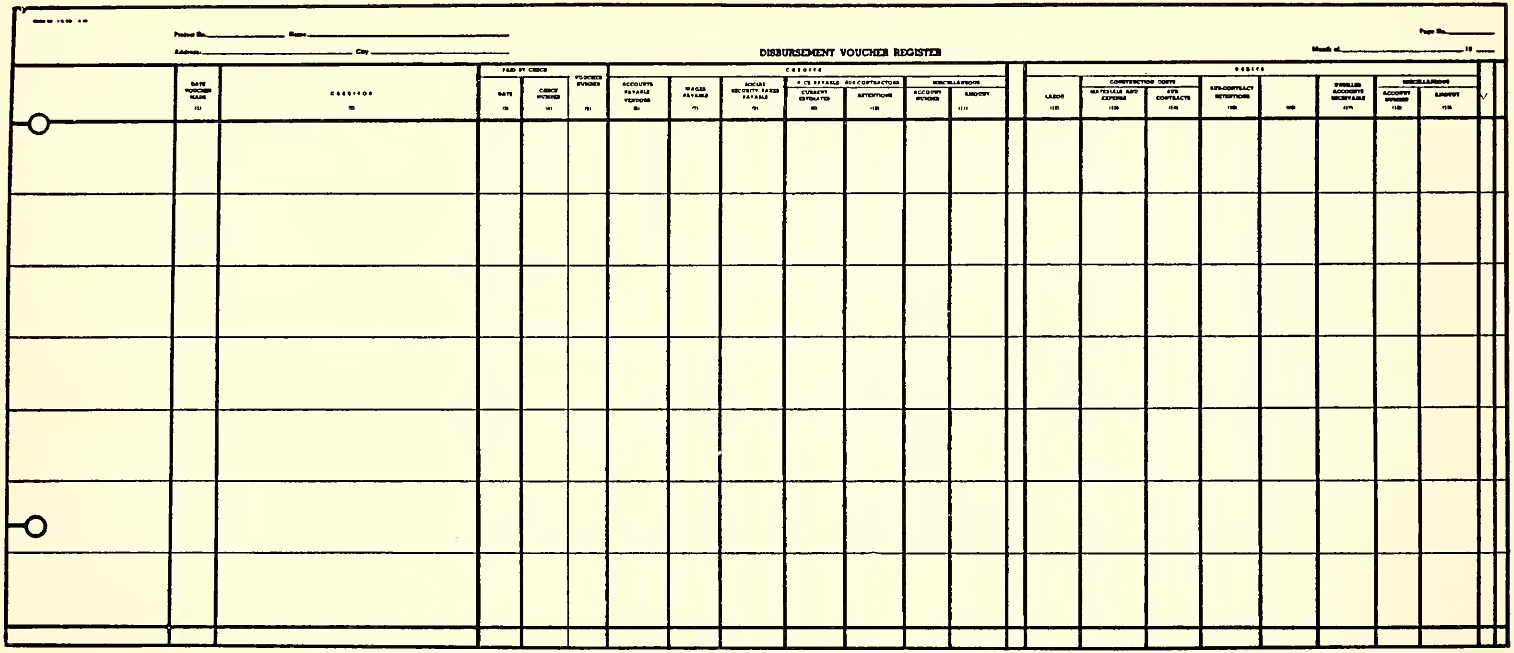
In smaller operations, where only a single signature is required, or in very large operations where auditing is a separate function, and the single signature is usually applied with a machine, the same two types of preauditing are required. In the small company it is often done by one man. In a very large operation it may be done by a whole department or, to some extent at least, it may be done by machines. Either way, if errors in payments and in the release of checks are to be avoided, the accuracy and the over-all reasonableness and propriety must be checked by someone in a position to know.

The most nearly foolproof and tamperproof system for distributing voucher checks is to mail them. This procedure is most effective when a multicopy voucher check is used. It is practical to type the name and address of the payee on the face of the check and to mail it in a window envelope. Preferably the stuffing and mailing should be done by someone not under the control of the person or the department preparing the checks or recording them. However, even when this separation of work is not possible, the system of mailing the checks works well. The check copies are difficult to tamper with and manual delivery of checks (when the system calls for mailing) is peculiar enough to attract attention.

Voucher register and cost ledger

If transactions are few it is possible to post them directly from the vouchers to the general ledger and the cost ledger. The usual procedure, however, is to enter them in a columnar voucher register (Fig. 13.8) and post the totals monthly. Figure 9.6 charted the flow of data from the basic documents through the voucher into a columnar voucher register.

Before entering the voucher, the accounting distribution should be



Project No.______ Name______

Address______ City______

DISBURSEMENT VOUCHER REGISTER

Page No.______

Month of______ 19___

			PAID BY CHECK			CREDITS							DEBITS							
									A/C PAYABLE SUBCONTRACTORS		MISCELLANEOUS			CONSTRUCTION COSTS					MISCELLANEOUS	
	DATE VOUCHER MADE (1)	CREDITOR (2)	DATE (3)	CHECK NUMBER (4)	VOUCHER NUMBER (5)	ACCOUNTS PAYABLE VENDORS (6)	WAGES PAYABLE (7)	SOCIAL SECURITY TAXES PAYABLE (8)	CURRENT ESTIMATES (9)	RETENTIONS (10)	ACCOUNT NUMBER	AMOUNT (11)	LABOR (12)	MATERIALS AND EXPENSE (13)	SUB CONTRACTS (14)	SUB-CONTRACT RETENTIONS (15)	(16)	UNBILLED ACCOUNTS RECEIVABLE (17)	ACCOUNT NUMBER (18)	AMOUNT (19)

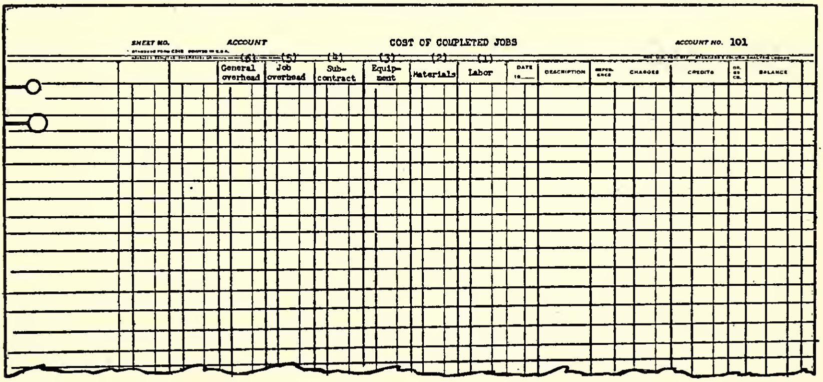
Fig. 13.8 Disbursement voucher register

This is one of the many types of columnar distribution voucher registers. It is made in duplicate to permit a copy to be sent to the general office in lieu of a job report.

checked. Some firms post the vouchers directly to the cost ledger in order to keep that record completely current, and when day-to-day cost reports are made from the cost ledger there is merit to this procedure. Still, most construction jobs move too fast even for this method. If the books can be closed and statements completed by the tenth of the month, it is usually better to use memo day-to-day costs on the larger variables like labor and equipment, and post the vouchers to the cost ledger through the voucher register in the same way that the general ledger is posted.

If the general ledger closing is delayed for some reason or if the general ledger is kept in the general office and the cost records are kept on the job, the direct posting of vouchers is often the only practical way to get accurate costs at the earliest possible time. It might be added that proper accounting machine applications can often make the posting of the cost ledger a by-product of writing up the voucher register. There are numerous forms of machine-kept cost ledgers but most of them follow the principle of columnar analysis.

Many smaller contractors do not keep a cost ledger as such. Instead, they merely use an analysis type ledger sheet (Fig. 13.9) for their general ledger accounts "Jobs in progress" and "Cost of completed jobs."



SHEET NO. ACCOUNT COST OF COMPLETED JOBS ACCOUNT NO. 101

		(6) General overhead	(5) Job overhead	(4) Sub-contract	(3) Equip-ment	(2) Materials	(1) Labor	DATE 19__	DESCRIPTION	REFER-ENCE	CHARGES	CREDITS	DR. OR CR.	BALANCE

Fig. 13.9 Analysis ledger sheet for cost of completed jobs

Unpaid vouchers

Theoretically, as soon as a shipment of goods is received it should be entirely possible to pay for it at once. As a practical matter, there are many factors that can and do prevent the immediate payment of invoices. Not the least of these is lack of money, but there are many others such as errors in shipment, errors in billing, back orders, disputed prices, and inadequate personnel. The result is that at the end of any accounting period there are always some unrecorded liabilities arising from unpaid invoices. If these are taken into account only when paid (on the so-called "cash basis") the books will reflect a more favorable financial condition than actually exists.

If such unrecorded liabilities are small in comparison with the whole operation, they have little significance. If money is short, or if for some other reason these liabilities are proportionately large, cash-basis accounting may mislead management into thinking a job is profitable when, in fact, it is operating at a loss.

There are several ways of taking unpaid vouchers into account at the end of an accounting period. The obvious way, of course, is to summarize the unpaid items on a work sheet which then becomes the basis for a journal entry. Such an entry is posted as one of the closing entries, and reversed after the close of the period. In the following period, the vouchers then are entered in the voucher register in the usual manner. This method, although quite standard, is subject to the criticism that it makes for more accounting work, particularly if the number of vouchers is large.

Another method commonly used to reflect unpaid vouchers in the financial statements at the end of the accounting period is to hold the books open until they are paid and then record them on a cash basis. If the time involved is not too great, this method has the merit of being simple and easy. Usually the time tends to get longer each period until the delay in obtaining financial statements more than offsets the ease and simplicity of the system.

Among the more effective and practical methods is to enter all vouchers in the voucher register as if they had been paid. Then in separate columns, enter: (1) The amount of each voucher for which a check is issued, (2) The amount of the check, (3) The amount of any other credits such as discounts taken. The total amount of all vouchers is credited to "Vouchers payable." The total of vouchers actually paid is debited to "Vouchers payable." In the voucher register for the following month the checks paying the unpaid vouchers of the prior month are entered in the columns provided for the checks, but there is no corresponding voucher distribution since one was made in the preceding period.

Under one variation of the method just described only the number of the check paying the voucher is entered. At the end of the month the unpaid items are totaled to determine how much of the total credit amount would go to "Vouchers payable" and how much to other general ledger accounts such as "Cash" and "Discounts earned."

Whatever method is used, one precaution is applicable. When unpaid vouchers are entered, the debits to the various cost, expense, and asset acounts are made at that time, and care must be taken to see that when the voucher is paid the debit goes to "Vouchers payable" instead of being distributed the second time. Any system which does not have automatic safeguards against such an error is deficient.

One such safeguard is to use a prefix to the voucher number that shows the month in which the voucher is first entered. Another is to make no distributions through the cash disbursements record, if such a record is maintained. Still another is to reserve a separate sheet for payments of prior months' vouchers in the current month's cash disbursement record. Safest and easiest of all is a system that combines all three of these safeguards.

Commitment control

A great deal of emphasis has been placed in this book on financial planning. To make such planning work, a good system of disbursement control is essential, but it is not, by itself, enough. There must also be a control on commitments. One of the most effective tools for controlling commitments is a system of pricing purchase orders and sending one copy to the voucher clerk immediately upon placing the order. The objections to this system have already been discussed in Chapter 5. It was also pointed out in Chapter 5 that, in most situations, the objections are without substantial merit and boil down, essentially, to a dislike on the part of some purchasing agents for the routine work required by such pricing. The situations in which pricing will not work are generally those involving a "black" or "grey" market. In such cases the requisitions can be used with estimated prices, and actual prices paid can be filled later. An alternative is the "field purchase order" prepared as a matter of record at (not after) the time of purchase and showing the actual price paid.

If a file of voucher documents is maintained, the first document should be the purchase order. Therefore, a summary of unfilled purchase orders in such a file would serve quite adequately as the starting point for a commitment control. The function of a commitment control is to make sure management knows how much money, not yet included in either cash disbursements or accounts payable, has been committed for payment.

The standard treatment for blanket purchase orders, and orders against which partial deliveries have been made, is to note the amounts received and the balance still to come, and to leave them in the file in order to reflect the commitment for deliveries still to be received. There is some question of the extent to which subcontracts should be taken into account in computing commitments, particularly when there are numerous change orders pending. It is usually better practice to include the unpaid subcontract balances, because any forecast of the cost to complete a job would have to take them into account, and any unbalancing in subcontract payment (Chap. 6) would be discovered by including them.

If a budget is used, commitments are deducted from available funds as soon as the money is spent, regardless of when it is paid. When the budget is tied directly into the accounting, an adjustment has to be made when the amount of cash paid out differs from the obligation as it appears on the purchase order. For the majority of contractors it is unnecessary to integrate the budget with the books. Usually, a weekly report showing how much has been spent on each item and how much remains uncommitted is enough. In separate accounts for a job, such a statement would usually treat each work item as a budget item. In a general office budget, the budget items are usually the same as the balance sheet and profit-and-loss accounts.

Commitment control in cash forecasting simply means that the forecaster makes provision for paying all future bills. If he has a schedule of amounts which have been spent and which will have to be paid as soon as delivery is received, it takes just one more element of guesswork out of the forecasting.

Sometimes cash forecasting on jobs takes the form of an estimate of cost to complete. Such an estimate usually starts with the cost ledger, adds known liabilities and commitments by distributing them to individual work items, and then estimates the additional money that will be required for each work item in order to complete the job. One of the most common errors in making estimates of cost to complete is failure to take into account the obligations reflected by open purchase orders and subcontracts. It can be avoided by using the unpaid voucher file as a source of commitment data.

14

Accounting for Income and Cash Receipts

In principle, construction companies account for their receipts like any other business. If they keep their accounts by the cash method they charge cash and credit an income account whenever they receive any money. If they keep their accounts by the accrual method, they charge some sort of current account receivable and credit an income account when they earn the money and then charge cash and credit the receivable when they receive payment.

Among the commonly cited exceptions to these methods is a practice which, in fact, is one of the more flagrant violations of sound accounting principles to be found in construction accounting. It consists of establishing the full contract price as income as soon as a contract is entered into. The entry is usually a debit to "Estimated cost to complete" for the estimated cost, a debit to "Unearned profits receivable," and a credit to "Contract revenue." The obvious fallacy of such a procedure is that it anticipates income and assumes that the job will be done for the estimated cost. Except for the fact that this method is occasionally seen in practice it is so faulty that it would scarcely be worthy of notice.

Progress billings

Among the more important of the genuine exceptions to the generally accepted methods is progress billing. Usually, construction contracts permit the contractor to bill the owner for work done up to a given date, percentage of completion or stage of physical completion. It is customary, though not always theoretically correct, to take into income the entire amount of the progress billing and to charge the retained percentage to an account receivable separate from the one currently due. This treatment ignores the fact that, under many contracts, the progress billing is merely an advance against the amount which will be earned when and if the contract is completed. Strictly speaking, the excess of progress billings over cost is a current liability representing the amount due the owner until the contract has been completed.

It is true that the percentage-of-completion variation of the accrual method of accounting is a recognized and widely accepted method of accounting for long-term construction projects. It is equally true that the percentage-of-completion method calls for treating the progress payments as fully earned at the time they become billable. Still, it is not entirely safe to think of them that way when managing the financial affairs of a construction company.

This caution is well understood by companies that make "unbalancing" the bid or the payment schedule an integral part of their financing plans (Chap. 4). In such companies, it is standard practice to carry the credit arising from the unbalancing in a separate deferred income account, instead of passing it directly to income. Failure to follow this procedure results in a large book profit early in the job, offset by book losses in the later stages.

On the other hand, complete nonrecognition of the profit element in progress payments can result in the equally anomalous position of showing, as a current liability, a credit balance which is, in fact, virtually all profit. The way out of this dilemma lies in careful analysis of the problems of each company. There is no single answer and no single formula. Probably the most satisfactory is percentage-of-completion accounting combined with regular and accurate estimates of cost to complete. With such estimates as a basis, reasonable periodic adjustments of total estimated job income can be made, and the statements can reflect the results of operation with reasonable accuracy. Despite the theoretical objections, this method usually seems to provide practical and usable answers when it is soundly applied. If it is not soundly applied, it can easily become a tool for wishful thinking by management.

Another variation from the customary type of income accounting occurs with progress payments of cost-plus-fixed-fee jobs. Two theories are widely held in accounting for cost-plus-fixed-fee jobs. For want of better names, they may be called the "profit-and-loss" approach and the "owner's equity" approach. In the former, the total of all progress billings, including both reimbursable costs and fee, are treated as job revenue, and the total of all costs, reimbursable or otherwise, is treated as job cost. In the latter approach, all amounts charged to the owner are contra to an "owner's equity" account in the "Net worth" section of the balance sheet.

Some contracts allow an additional fee when the scope of the work increases to the point where costs exceed an agreed amount. Billings for reimbursable cost should then include the value of owner-furnished materials and equipment. An equal amount is then allowed as a credit to reimbursable costs receivable, and a charge is made, either directly to job cost or to whatever account was credited when job costs were charged.

Whether the collection of retained percentages presents any special problems depends upon how the accounting was done at the time the progress billings were made. If the entry was a debit to some such account as "Retained percentages receivable" and a credit to job revenue, the procedure is conventional and the collection of the retention would call for a charge to cash and a credit to the receivable account. When a special billing for the retained percentage is required even though it has already been taken into account in entering the current billings, it is necesary to treat the special billing for the retention as a memo billing. Otherwise income and receivables will be duplicated. On the other hand, if the strictly legalistic concept of retained percentages is followed, and only the currently collectible portion of the progress billing is taken into account, then the special billing for the retained percentage must be entered like any other invoice.

Of course, if the accounts are kept on a completed-contract basis, the accounting treatment of the retained percentage is not a problem. No part of the billing becomes income until the job is completed and closed. Interim progress billings would have been credited to some such account as "Progress billings on jobs in progress" and charged to some such accounts as "Progress payments receivable" and "Retained percentages receivable." When the job is closed the balance of the account called "Progress billings on jobs in progress" is transferred to some such account as "Revenue from completed contracts."

Other income

Aside from progress payments, construction companies may derive income (and ultimately cash receipts) from such sources as those listed below. In later portions of this chapter the accounting for these items of income is described in somewhat greater detail. In summary, however, they are:

1. *Work done for others at the job site:* The income from this source would usually enter the records through a field work order (Fig. 11.3), which would be the source of a billing to the person for whom the work was done.

2. *Equipment rentals:* The income from this source would enter the records through the equipment rental agreements which form the basis for billing the rentals. Sometimes the person renting the equipment is required to report the time the equipment is used, and then the reports form the basis for the billing.

3. *Sales of used equipment, scrap, and surplus materials and supplies:* Usually the charges arising from these sales can be most easily brought into the records by a warehouse issue ticket (Chap. 9). However, when assets are being distributed at the conclusion of a joint venture, it may be better merely to divide the surplus items and make only transfer records. Otherwise some states (such as California) will attempt to levy a sales tax on the transfer.

4. *Insurance refunds and proceeds of insurance claims:* The refunds are usually not taken into account until the check from the insurance company is received. Then it is deposited and the credit is passed either to insurance expense or to miscellaneous income. Insurance claims, on the other hand, are recorded by journal voucher as soon as proof of loss or the "over, short and damage report" and the resulting claim are filed.

5. *Discounts earned:* Discounts almost always enter the records through the check register, where the liability account is charged for the invoice price and cash is credited only for the amount paid. The excess credits go to a miscellaneous income account called "Discounts earned." An alternative treatment, often followed where cash basis accounting is used, is to charge the items purchased, net of discount, to the appropriate accounts. Generally speaking this method is not too satisfactory, since it fails to reflect the cash value of having money on hand to pay bills.

6. *Camp and mess receipts:* Some of the larger companies whose jobs are isolated may operate a camp, a mess hall, a commissary, a company store or a trailer camp, and sometimes all five. Employees or other users may pay in cash or through payroll deductions. The routines used in accounting for these items of income are described at greater length in this chapter and in Chap. 18.

7. *Repair services:* If a contractor sells repair services such as those provided by plumbers and electricians, in addition to regular

contract work, how can these numerous small jobs be handled within the structure of a job order accounting system? The answer usually lies in lumping all small jobs into a single blanket work order which is closed out periodically. The customer receivables are entered from the job ticket, and both income and cost are charged to a single work order designated by some such title as "Repair jobs." Sometimes such contractors will operate a number of repair trucks. Then a separate blanket work order for each truck will show the comparative earning power of each of the repair crews.

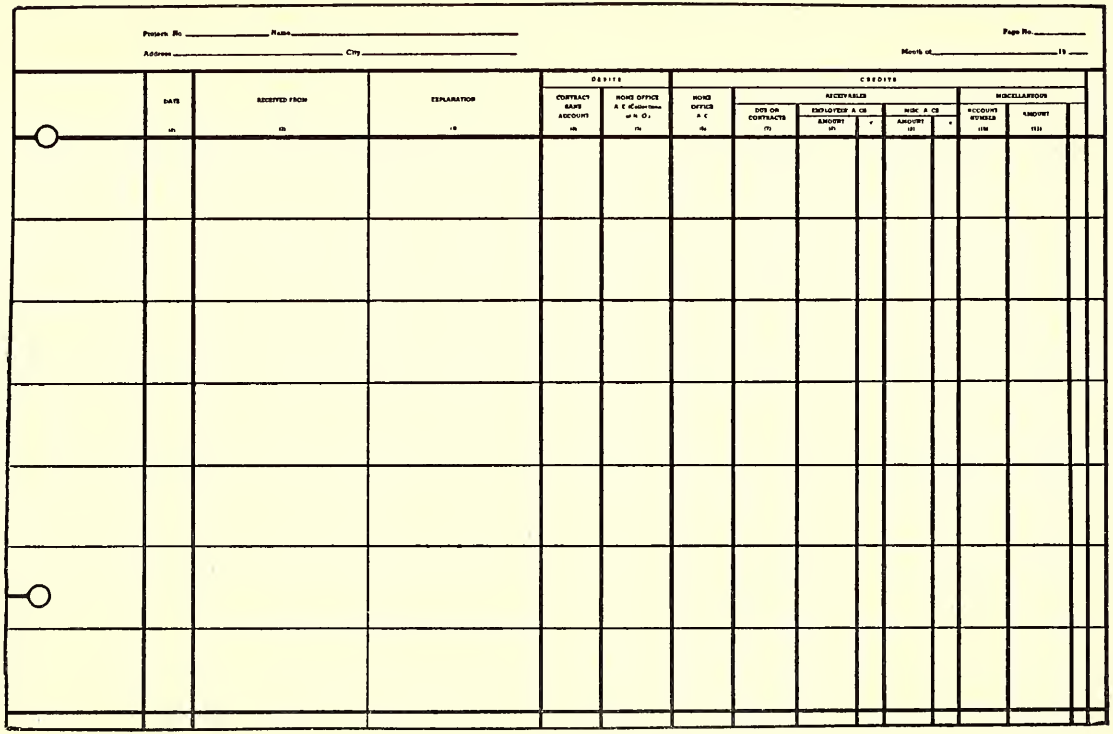
Recording income

The real starting point for most income acounting in the construction business is the preparation of invoices or billings to customers. There are a few exceptions, such as those arising in camp operations, but the bulk of the incomes comes from transactions that are represented by customer billings. Once invoices are prepared, they must be summarized before being posted to the general ledger. One form of journal record (Fig. 14.1) combines the cash receipts and contract billing records. This form is useful for smaller contractors. There are many others. Sometimes cash receipts are recorded in one book and sales or customer's invoices in another. When the customer's invoices are numerous, it is a good idea to post the detail to a subsidiary "customer's ledger" or "accounts receivable ledger" (Chap. 15).

In its simplest form, a request for a progress payment is no more than an invoice (Fig. 14.2). It will usually state the basis on which the billing is made, and often it must be authorized by the owner's representative. For example, if a contract for building a single-family residence called for payment of one-third of the contract price when the rafters were in place, the billing might appear as in Schedule 14.1.

SCHEDULE 14.1/SIMPLE PROGRESS BILLING

Per article XI of contract dated March 4, 19—		
Contract price	$16,500	
One-third due when rafters are in place		$5,500
Less: 10 per cent retention		550
Due on this billing		$4,950
APPROVED:		
______________________________		*Architect*



Project No. ____________ Name ______________________

Address ______________________ City ______________________

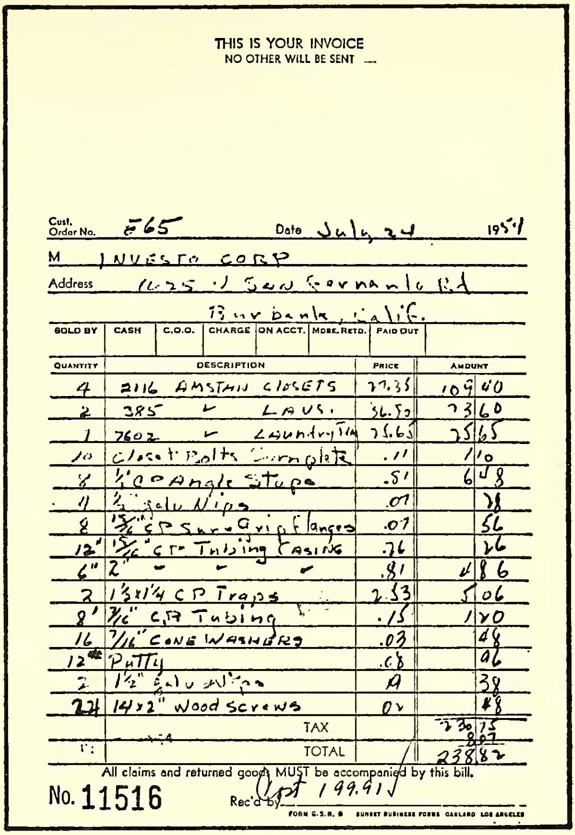
Page No. ____________

Month of ______________________ 19 ____

			DEBITS		CREDITS							
						RECEIVABLES					MISCELLANEOUS	
							EMPLOYEES A/CS		MISC. A/CS			
DATE (1)	RECEIVED FROM (2)	EXPLANATION (3)	CONTRACT BANK ACCOUNT (4)	HOME OFFICE A/C (Collections of H.O.) (5)	HOME OFFICE A/C (6)	DUE ON CONTRACTS (7)	AMOUNT (8)	✓	AMOUNT (9)	✓	ACCOUNT NUMBER (10)	AMOUNT (11)

Fig. 14.1 Cash receipt record

This form, prepared in duplicate, is designed for use in a system in which the copies of the books of original entry are sent to the general office for posting to the job general ledger.



THIS IS YOUR INVOICE
NO OTHER WILL BE SENT

Cust. Order No. #65 Date July 24 1951

M INVESTO CORP

Address 1625 N San Fernando Rd
Burbank, Calif.

SOLD BY	CASH	C.O.D.	CHARGE	ON ACCT.	MDSE. RETD.	PAID OUT

QUANTITY	DESCRIPTION	PRICE	AMOUNT	
4	2116 AMSTAN CLOSETS	27.35	109	40
2	385 " LAVS.	36.80	73	60
1	7602 " Laundry Tray	25.65	25	65
10	Closet Bolts Complete	.11	1	10
8	½" CP Angle Stops	.81	6	48
4	½" galv Nips	.07		28
8	15/16" CP Sure Grip Flanges	.07		56
12"	15/16" CP Tubing Casing	.76		76
6"	2" " " "	.81	4	86
2	1½x1¼ CP Traps	2.53	5	06
8'	3/8" CP Tubing	.15	1	20
16	7/16" CONE WASHERS	.03		48
12#	Putty	.08		96
2	1½" Galv Nips	.19		38
24	14x2" Wood Screws	.02		48
	TAX		230 8	75 07
	TOTAL		238	82

All claims and returned goods MUST be accompanied by this bill.

No. 11516 Rec'd by Cpt 199.91 √

FORM G.S.R. 8 SUNSET BUSINESS FORMS OAKLAND LOS ANGELES

Fig. 14.2 Combination delivery receipt and invoice

This form is prepared in triplicate. The original is signed by the person receiving it and placed in the job cost file. The duplicate is left with the client and serves both as a delivery memo and as an invoice. Illustrated is the triplicate, which is sent to the accounting department for inclusion in the client's account.

If the job were one in which payments are to be based on a percentage of completion of each work item the request for progress estimate might appear as in Schedule 14.2.

Cost-plus-fixed-fee contracts call for progress billings which merely list the checks paid, the name of the payee and the amount. Usually these summary sheets, or "transmittals" as they are sometimes called, are accompanied by copies of the checks, invoices, purchase orders, delivery memoranda, and whatever other supporting data may be available. Copies of payroll checks are not usually supplied but copies of the payrolls are.

At one time it was quite common to require that the invoices be marked "paid" and some owners, particularly government agencies, still insist on this procedure. However, the better procedure is to require copies of the checks, since as a practical matter contractors generally require suppliers to receipt the invoices in advance so that they can be submitted for payment. The supplier is then paid when the contractor receives the reimbursement check. If there is any question about the contractor's financial position, it is quite in order to require a bond, and this usually costs the owner less than the additional cost of the unnecessary paper work involved in getting receipted bills. Many old-time contracting officers will dispute this assertion but modern practice has proved it is often true.

SCHEDULE 14.2/PROGRESS BILLING ON PERCENTAGE-OF-COMPLETION BASIS

Work item		*Total*	*Per cent*	*Amount*	*Previously*	*Earned*
No.	*Description*	*amount*	*complete*	*earned*	*billed*	*this period*
1	Site preparation	$ 1,000	100	$1,000	$1,000	—
2	Excavation	2,500	100	2,500	1,500	$1,000
3	Forms	2,400	75	1,800	400	1,400
4	Reinforcing	1,500	60	900	100	800
5	Concrete	13,300	10	1,330	—	1,330
6	Roof	9,100	—	—	—	—
7	Plumbing	3,100	5	155	—	155
8	Electrical	4,300	5	215	—	215
9	Cement finishing	1,000	20	200	—	200
10	Sash and doors	3,900	—	—	—	—
11	Painting	2,500	—	—	—	—
12	Cleanup	500	—	—	—	—
		$45,100		$8,100	$3,000	$5,100
Less: 10 per cent retention				810	300	510
	TOTALS			$7,290	$2,700	$4,590

APPROVED:

_______________________________ *Architect*

Back charges

Back charges represent charges for materials, equipment, services, or other costs or expenses furnished to the contractor by the owner or to the subcontractor by the prime contractor. Using the field work order (Fig. 11.3) is one way of authorizing back charges. Another method is to cover such charges in the contract itself. It is rarely satisfactory to accept back charges without written authorization made at the time of the specific transaction. If some charge appears to be proper and there is no authorization, the contractor (or in larger firms some top executive) should personally authorize any back charge before it is accepted.

The procedure for handling back charges, once they are authorized, is simple enough. The owner backcharging the contractor (or the contractor backcharging the subcontractor) merely prepares an invoice for the agreed price of the back charge, enters it as he would any other invoice, and deducts it from the next progress payment. In entering the receipt of the progress payment reduced by the amount of the back charge, the appropriate cost, expense, or asset account is debited for the amount of the back charge and the debit to cash is correspondingly decreased.

Equipment rentals

In accounting for income from equipment rentals, the first step is to establish a file of rental agreements. These may not be in the form of written contracts, but some record must be kept to show what units are involved, the terms of the rental, the rental rates, and any special provisions. Chapter 10 covers this phase of the procedure.

The significance of such a file is that it can be used as a starting point for the preparation of equipment rental billings. Often it is a good idea to use some type of visible-card record (Fig. 14.3). Sometimes it is possible to design the equipment ledger itself so that rentals may be controlled by one of its sections. Whatever form the rental agreement file takes, the best way to be sure that all equipment rentals are billed is to use the file to prepare billings on all equipment out during the month. When the amount of the rental charge depends upon an equipment time report, the billing can still be prepared so that the file of uncompleted billings will serve as a follow-up on the time reports still to come. The billings themselves are entered in a receipts record (Fig. 14.1), and from there the totals are posted to general ledger accounts and the detail to customer accounts (Chap. 15).

Some contractors, particularly those who use decentralized accounting, distribute the cost of owning and maintaining equipment by "renting" it to their own jobs. As previously indicated (Chap. 10),

EQUIPMENT RENTAL CONTROL

Rented To	Time In Use		Total Time	Rate	Rental Earned		Date Billed
	From	To					

Item............................ Equipment Number.............

Fig. 14.3 Visible record index card for controlling equipment rental billings

If volume is heavy, Kardex or similar cards may be useful.

this method has virtually the same effect as a standard cost system for equipment operation. However, it is not uncommon to see the so-called "income" from "renting" equipment to the company's own jobs entered with the actual income derived from renting equipment to others. The two are not comparable and should always be segregated.

Requests for final payment

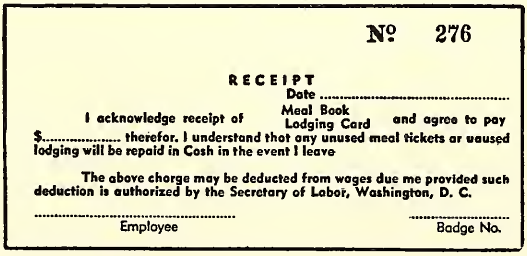
A request for final payment usually takes the form of an ordinary invoice or a progress billing, the latter being somewhat more specialized. The form is often determined by the provisions of the contract, and some owners and architects actually specify the form in detail. Usually it must be accompanied by releases (Fig. 6.1), and sometimes by affidavits and other evidence of having satisfied all possible lien claimants. If all, or any part of a final payment is to be held past the lien period to insure performance of any guarantee provisions in the contract, then that amount should be transferred to an account such as "Guarantee deposits."

If the retained percentage, which usually makes up the final payment, has already been taken into income, the final request will form the basis for transferring the amount from "Retained percentages" to "Progress payments currently due." If the practice has been to record only the progress payment net of the retention, then the final payment request would be entered the same as any other billing.

On a cost-plus-fixed-fee contract with a participation in savings under a guaranteed maximum, there might be one or two "final" billings. If the cost has been audited and the amount of participation has been determined at the time the final billing is made, or if costs exceed the guaranteed maximum, then only one final billing would be required. However, if costs are less than the guaranteed maximum and have not been audited, then a final billing for the previously nonreimbursed costs plus the unbilled portion of the agreed fee would be made, followed by a supplemental billing for participation in the saving.

Other income

If a camp is maintained on a job, the camp revenue usually enters the books through the camp manager's report (Fig. 18.8) and is collected by payroll deduction. Mess hall receipts may be collected in several ways. Meals may be charged at a flat rate per day or per week and then would enter the records and be collected in the same way as the camp charges. If meal tickets are sold, it is usually possible to collect for most of them by payroll deductions. However, some employees prefer to pay cash for them, and such cash will be listed in the report. The camp manager should have a prenumbered receipt book (Fig. 14.4) or combination receipt and charge ticket book. The



№ 276

RECEIPT

Date ....

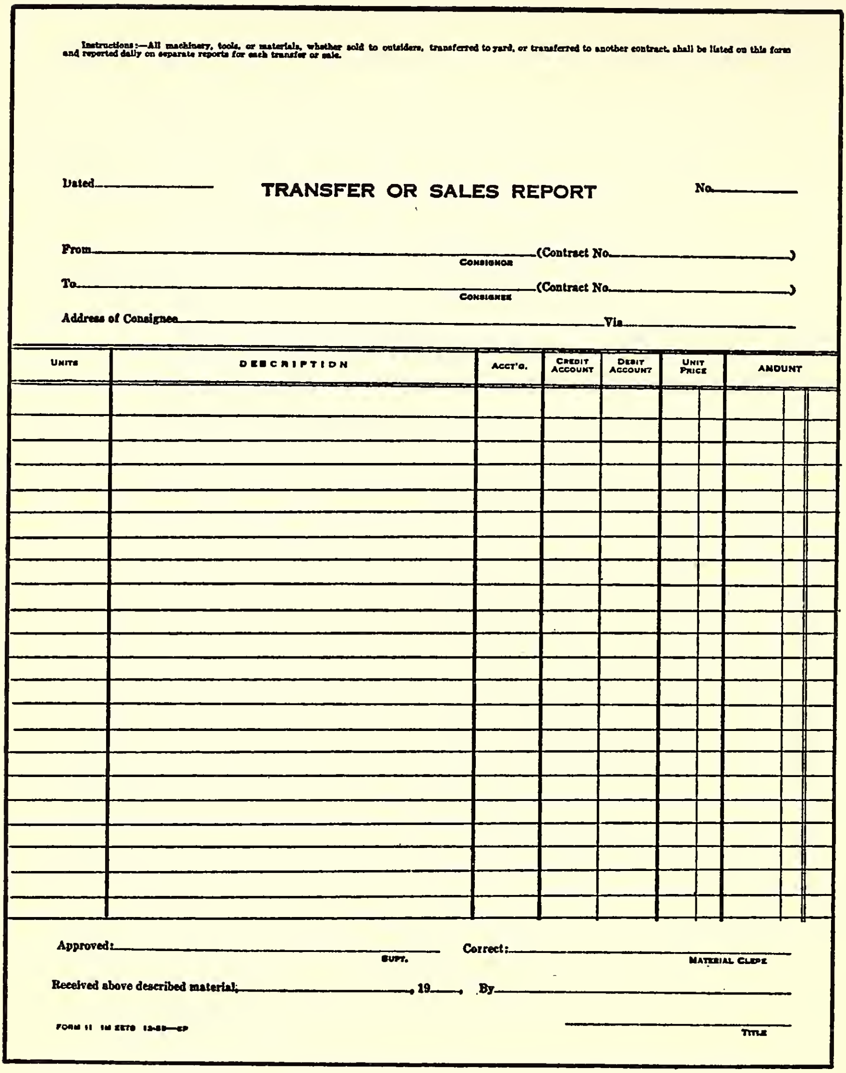
I acknowledge receipt of Meal Book / Lodging Card and agree to pay $.................. therefor. I understand that any unused meal tickets or unused lodging will be repaid in Cash in the event I leave

The above charge may be deducted from wages due me provided such deduction is authorized by the Secretary of Labor, Washington, D. C.

.... Employee

.... Badge No.

Fig. 14.4 Receipt for meal books and lodging cards



Instructions:—All machinery, tools, or materials, whether sold to outsiders, transferred to yard, or transferred to another contract, shall be listed on this form and reported daily on separate reports for each transfer or sale.

Dated__________ **TRANSFER OR SALES REPORT** No.__________

From____________________ (Contract No.__________)
CONSIGNOR

To____________________ (Contract No.__________)
CONSIGNEE

Address of Consignee____________________ Via__________

UNITS	DESCRIPTION	ACCT'G.	CREDIT ACCOUNT	DEBIT ACCOUNT	UNIT PRICE	AMOUNT

Approved:____________________ Correct:____________________
SUPT. MATERIAL CLERK

Received above described material__________, 19___, By____________________

____
TITLE

Fig. 14.5 Transfer or sales report

This is a combination form for use in reporting and recording either transfers of materials, supplies, or equipment from one job to another, or sales of such items. Five differently colored copies are prepared.

latter may also be issued on a billing machine. When a meal ticket is sold for cash a "cash ticket" or receipt would be issued. If the price were to be deducted from the man's paycheck, a charge ticket (Fig. 18.4) would be issued.

Commissary and company store sales differ from camp and mess hall sales in that the former call for more over-the-counter selling for cash. If cash sales are substantial, a cash register is the most efficient and economical way to account for both the sales and the incoming cash. Charge sales would, of course, be handled on prenumbered charge tickets. These all form a part of the camp manager's daily report.

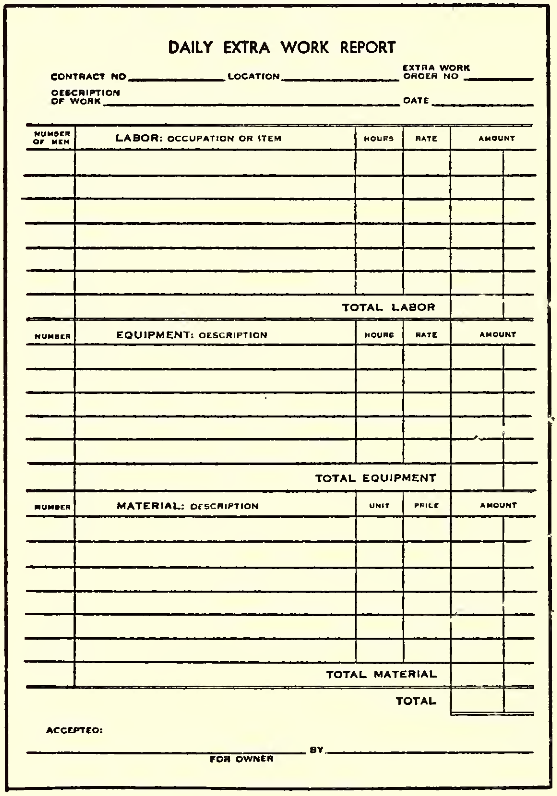
Some contractors follow the practice of subcontracting the camp, mess hall, and commissary activities, and it is true that this procedure limits the paper work to a minimum. However, it also may defeat its own ends. Such activities can contribute substantially to the efficiency and morale of the personnel on a remote job if properly run, but they can also have the opposite effect. If they are to be run at all, it is better to run them for what they can contribute to the job rather than for the profit they can make. If a contractor runs these operations himself, he can control them better than if he were to sublet them. On the other hand, it is sometimes possible to use the facilities of some contractor already on the site for a fair price, and thereby achieve both objectives.

When books are kept in the general office, a report (Fig. 14.5) covering any transfer or sale of equipment, material, supplies, or tools should be made. Once a month these reports are summarized. They form the supporting documents for a journal voucher (a general journal entry) through which they enter the general ledger. To keep the cost ledger up to date from day to day, these reports may be posted directly to the cost ledger as they come in from the jobs.

The use of the field work order (Fig. 11.3) has already been described. Essentially it is a means of authorizing extra work to be done. As the work is actually done, its cost must be accounted for and accumulated on a daily extra work report (Fig. 14.6) for billing purposes.

A change order that alters the amount of a contract has a direct effect on the contractor's income. Chapter 7 deals with change orders in detail and the illustrations given there are applicable here. In accounting for income it is necessary to be sure that progress billings reflect all change orders that have been made final at the date of the billing. Usually this is a function of the engineering or operations personnel, but it is ordinarily up to the accounting and office personnel to see that the change order files are up to date.

On cost-plus-fixed-fee jobs, as already noted, there may be an additional fee due when change orders raise the cost beyond an agreed amount. Owners will sometimes seek to avoid such a result by furnishing materials, equipment, insurance, bond, and so on. It is thus possible to increase the scope of the work substantially without increasing the fee, unless the contractor makes provision for such a contingency in the contract. However, even if such provision is made, there is still need for a summary report (Fig. 14.7). This report should be prepared and incorporated into the periodic billings.



DAILY EXTRA WORK REPORT

CONTRACT NO.______ LOCATION______ EXTRA WORK ORDER NO ______

DESCRIPTION OF WORK______ DATE______

NUMBER OF MEN	LABOR: OCCUPATION OR ITEM	HOURS	RATE	AMOUNT
	TOTAL LABOR			
NUMBER	EQUIPMENT: DESCRIPTION	HOURS	RATE	AMOUNT
	TOTAL EQUIPMENT			
NUMBER	MATERIAL: DESCRIPTION	UNIT	PRICE	AMOUNT
	TOTAL MATERIAL			
	TOTAL			

ACCEPTED:

______ FOR OWNER BY ______

Fig. 14.6 Daily extra work report

This form provides data for billing clients and others for work not specified in the main contract.

Occasionally money will be received from miscellaneous sources, such as the refund of bid or plan deposits, insurance premium refunds, insurance recoveries, recovery of items of expense, or overpayment of an account. When such amounts are received, the credit should go to the account originally charged, if such treatment is not unduly difficult. This procedure is elementary to a trained accountant but the rule is violated often enough to make it worthy of mention. An outstanding example is the crediting of insurance recoveries to "Miscellaneous income." An equally common, though somewhat less obvious violation of the same rule, is to credit the "Equipment" account (or other fixed asset) with the cash received on the sale of a piece of equipment. This happens because the bookkeeper overlooks the fact that the "Equipment" account is charged with the full cost of the item and that the "Reserve for depreciation" account contains credit equal to the total depreciation since the item was acquired. Therefore the entry is:

Dr. Cash (or Accounts receivable)
Reserve for depreciation
Loss on the sale (if book value is more than selling price).
Cr. Equipment (for the total cost)
Gain on the sale (if book value is less than selling price).

Sometimes, when there is recovery of expense written off in a prior year, such as insurance refunds affecting premiums of prior years, tax refunds, or bad debt recoveries, it is proper to credit the receipt to "Miscellaneous income."

Cash receipts

Accounting for actual receipts of cash is much the same in any business. Cash should be controlled when it comes into the company's possession; deposited in a bank account as soon as practicable; and recorded on a suitable form (Fig. 14.1). Unless the business is so small that the contractor does all the office work personally, it is a good idea to have the mail opened and the checks taken out and listed by someone who does not handle the cash or keep the books. If, as in many smaller firms, the office is run by a combination bookkeeper–office manager, the contractor may find it worth while to open all mail personally. Then he not only knows about incoming checks, but also about a great many other things that would otherwise escape his attention. There is one exception to this suggested procedure. Any proprietor who has a tendency to hold out small checks (or any checks) and cash them for pocket money should be kept as far as possible from the incoming mail.

SUMMARY OF COST ITEMS FURNISHED BY OWNER

Job name. . . . . .Job No.. . . . . .Date. . . . .

Items	This month		Job to date	
LABOR Supervisory				
Clerical				
Engineering				
Trades				
Other				
TOTAL LABOR				
MATERIALS Lumber				
Cement				
Sand and aggregate				
Steel				
Hardware and miscellaneous iron				
Other				
EQUIPMENT				
OTHER Bond				
Insurance				
Sundry				
GRAND TOTAL FURNISHED				

Compiled by. . . . . .Approved by. . . . .

Fig. 14.7 Summary of cost items furnished by owner of cost-plus-fixed-fee jobs

Cash coming in from scrap or surplus materials sales should, as a matter of standard procedure, be accounted for on a prenumbered receipt which must be made at the time of the transaction and at no other time. If there are numerous over-the-counter sales, a cash register may be useful to a contractor. Otherwise, a sales ticket should be made at he time of sale, showing the amount of cash collected. Often the most convenient way to prepare such a ticket is on a counter-type billing machine.

Theft and misappropriation

There is no absolute guarantee against employee dishonesty, but the nearest thing to it is a combination of external and internal auditing, internal control procedures, and fidelity bonds. These measures make it as difficult as possible for an employee to steal, and make ultimate discovery of any theft reasonably certain. In the small, one-man firms, the opportunities for use of internal controls are fewer than in a larger firm. On the other hand, the opportunities for internal audit are usually greater. This statement is true for two reasons. First, in the small firm the contractor either sees or handles most cash transactions personally and if he is alert he can usually detect any dishonesty. Second, there are so few transactions that one person can know about, and remember, most of them.

Dishonesty in handling cash receipts may assume one simple form —pocketing incoming cash instead of recording it. It is the function of internal auditing procedures to look for the likely sources of cash; to find out if it actually came in; and then to check the records to see that it was recorded and accounted for correctly. It is the function of internal control to design the accounting procedures in such a way that failure to record incoming cash will cause the cash deposited in the bank (and so controlled by an outside agency) to fail to balance with some record kept by an individual who has access neither to the cash itself nor to the cash records. It is the function of fidelity bonds not only to reimburse the employer for theft losses but to create in the minds of employees handling cash the certainty that once theft is detected it will be prosecuted.

In the one-man contracting firm, the contractor himself usually knows all the transactions which should bring in cash. He also knows how much is coming in. If it does not come in, he knows or will find out why. Such conduct, of course, is internal auditing in its most effective form, and with it the need for internal control disappears. The chance that anyone can steal cash and avoid getting caught is virtually nil.

This theory breaks down, however, when the contractor gets too busy with other things to think about (and follow up on) incoming cash. It also breaks down if he himself takes the incoming cash and makes no record of it. If the contractor follows this practice, he allows any employee, with the opportunity, to follow the same example, counting on the protective assumption that all will make, that undoubtedly the proprietor took the money himself as usual, but forgot about it.

In larger concerns, the auditing is done either by someone in the accounting department or by special internal auditors. The internal control is obtained by having someone outside the accounting department handle the money. In that way the person who controls the money does not control the cash records and vice versa. When such a division of work exists, it takes collusion among two or more people to conceal a theft by juggling the books. This necessity, in itself, makes stealing harder and less profitable. Coupled with compulsory vacations and occasional transfers, the separation of cash handling from cash accounting can be an effective device. Adding an adequate fidelity bond provides as much protection as is possible against cash fraud.

Liquidation problems

After every large job, and after many medium-sized and small jobs, there is a certain amount of surplus material to be sold. This situation results in something more than the usual problem of cash control. Normal routine may be nonexistent; sales may be made on a forced-sale basis; and there is very little comparison between liquidating prices and normal prices for the same items. Often project managers and superintendents will make deals during the job based on promises of preferences to be given in liquidation when the job is closing. By the time the sales are actually being made, the man who made the deals may be gone.

One way to achieve some control in these postjob liquidations is to send an inventory team around the job, as it is approaching completion, to count and appraise the items to be sold. If possible, it is a good idea to accumulate in one place the things to be sold. Then the liquidator must account for either these items or the price set by the inventory team. Variations from the inventory price would be permitted only when justified. If this system is practicable, it can prevent any major diversion of assets or misappropriation of funds. Each sale would be evidenced by a prenumbered invoice. Receipts would be deposited in a special liquidation bank account on which withdrawals could be made through the head office only.

Liquidations of equipment are usually less difficult than liquidations of materials, supplies, and scrap. The units are larger and usually bear identifying numbers. Prices are more easily determined. Here the inventory and price list technique is definitely practical and should be followed. The prenumbered invoice would also be used in addition to whatever type of bill of sale might be required by local law. The proceeds would still go into a liquidation bank account. Sometimes it is possible to find a finance company or bank that will buy conditional sales contracts "without recourse," and on such a basis, equipment should bring enough more to make credit sales profitable. However, lacking such an arrangement, liquidation sales should be made for cash only. Checks should be accepted with care, and deposited immediately. It may be that some of the bad ones can be caught before the goods are completely out of reach.

Lien laws

Any discussion of contractor income must include a general consideration of lien laws and bond acts. It has already been pointed out that most of a contractor's work consists in improving the real property of others. Therefore, if the contractor is to have any security for his work, there must be some statutory provision that gives him the power to obtain an interest in the real property if he is not paid. Work on privately owned real propery is protected by lien laws in all states.

When work is done on real property owned by federal, state, or local governments, it is contrary to public policy to permit private individuals to obtain an interest in the realty through liens. Therefore the various states and the federal government have provided for payment of workmen, material suppliers, and sometimes others, through laws requiring prime contractors to post payment bonds. Also, many state laws provide for so-called "stop notices" under which the government owner will withhold payments to the prime contractor until the claimant is paid or his claim secured by a special bond.

Any rights a contractor or subcontractor may have under any of these laws are strictly statutory, and the statute must be strictly complied with or the right will be permanently lost. Most of these laws require formal notice within a relatively short time after the last work is done, followed by the filing of a lawsuit to recover the money within a stated time after notice. A typical provision is one that calls for the filing of a lien within 30 days after notice of completion (or within 90 days after the last work on the job if there has been no notice of completion) followed by the filing of suit within 90 days after notice if payment is not received. Therefore, if payment is not received when due it is vital that the contractor consult his attorney immediately. Otherwise his action may come too late and the rights may be lost.

The statutes differ in every state, and the state statutes differ from the Federal Bond Act of 1935 (Miller Act), which controls work for the U.S. government. Also, changes are frequent both in the statutes themselves and in the court decisions that interpret them. The differences include not only the time within which action must be taken but also the specific procedures followed and the extent of the protection afforded. This means that it is unsafe for the average contractor to proceed without the help of his attorney and that preferably, in choosing his attorney, he should be careful to select one who has had experience with construction contractors' problems.

15

General and Subsidiary Ledgers

A record of any one transaction, standing alone, is not likely to mean a great deal. Its meaning increases when it is grouped with other transactions of the same kind. For example, a voucher showing the purchase of a load of lumber shows when it was bought, from whom, and its cost. Grouped with all other purchases of material, the same voucher gains significance as a part of the total cost of materials. Broken down to show the job on which the lumber was used, the voucher gains still more meaning as a part of the material cost of a specific job. Broken down further, and classified by the actual use to which the lumber was put on the specific job, it becomes a part of the cost detail that tells the contractor whether his original estimate was right, and whether some aspect of a job is being run as efficiently as it should be.

One of the principal functions of accounting records is to group transactions in ways that will provide useful information to those who manage the business. Stated another way, every figure needed by management should appear as the balance of some ledger account. For example, it is important to know the total amount you can expect to receive from your customers in the near future, and so you have a general ledger account called "Progress payments currently due." Or, if retained percentages are not significant, you may just have an account called "Trade accounts receivable" or "Amounts due from customers." It is equally (if not more) important to know specifically who owes you the money, so a record is also kept of the amount each customer owes. The total of the individual customers' accounts must, of course, equal the amount which the general ledger shows as being due from all customers.

To the experienced bookkeeper or accountant the controlling account and the subsidiary ledger just described are almost too elementary to mention, and the accounts receivable–customer's ledger relationship is the most elementary of the lot. Still, it is not uncommon, among construction companies, to find this elementary relationship being ignored.

For example, it is fairly common to find cash, advanced to jobs in progress, treated as accounts receivable and thrown in with amounts due from customers. This treatment is especially common if job accounting is decentralized. Again, it is not uncommon to find, in the general ledger, an account called "Equipment," which has been charged with a wide variety of capital expenditures. There may be an equipment ledger showing individual pieces of equipment and what part of the general ledger account balance applies to each one. In a given situation such treatment may be entirely proper, but there is a good chance that it is costing the contractor money on his income tax because of his failure to provide the information necessary to claim the proper amount for depreciation.

Every record kept and every figure recorded should have a purpose. If it has no purpose, the cost of putting it down is wasted. Therefore, when deciding what accounts to have in the general ledger and which of the general ledger accounts is to control a subsidiary ledger, it is necessary to determine the use to which the information will be put. Keeping records or making analyses that are not needed just because "somebody might ask for it" is an expensive precaution.

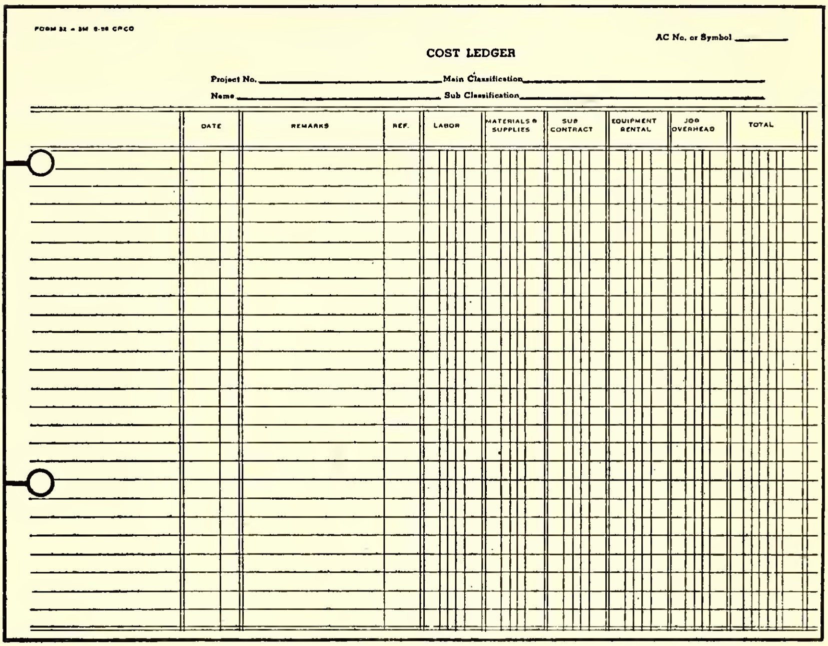
For that reason, whenever an accounting system is being designed or reviewed, the need for each general ledger account and each subsidiary ledger must be determined in terms of the four following questions:

1. What are we trying to accomplish by keeping this account (or this subsidiary ledger)?

2. How much work is going to be required; and is that work justified in view of the objective?

3. Do we have any well-defined accounting policies and, if so, does this account (or subsidiary ledger) contribute anything to carrying out these policies?

4. Are there any peculiar job conditions that require the particular accounting treatment that this account (or subsidiary ledger) provides?



FORM 32 – 3M 8-58 CPCO

AC No. or Symbol ______

COST LEDGER

Project No. ______ Main Classification ______

Name ______ Sub Classification ______

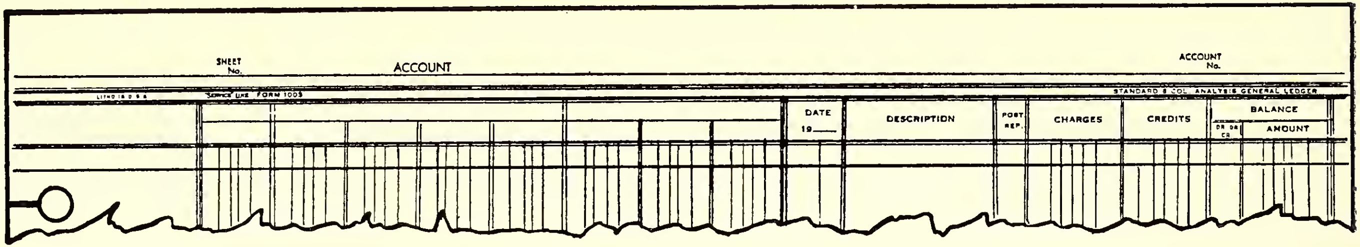
	DATE	REMARKS	REF.	LABOR	MATERIALS & SUPPLIES	SUB CONTRACT	EQUIPMENT RENTAL	JOB OVERHEAD	TOTAL

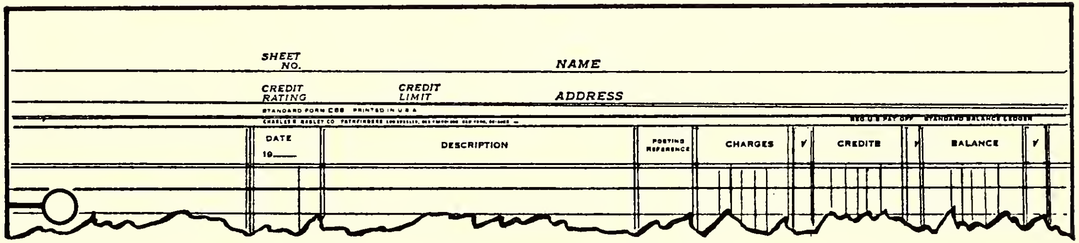
Fig. 15.1 Cost ledger sheet

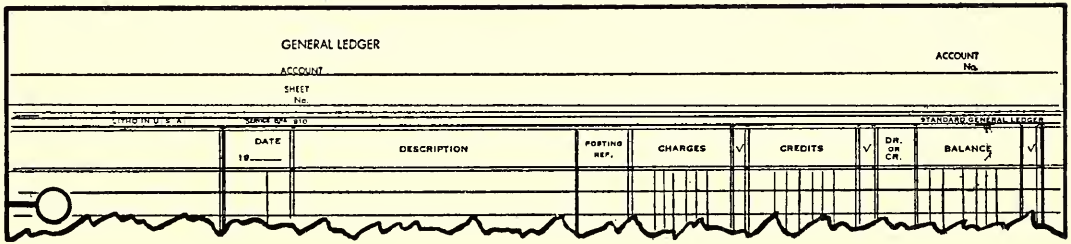
This form is designed for hand bookkeeping, but a similar form may be used in machine systems.

Account classifications

Because the needs of companies in the same industry tend to be similar, it is usual to find more or less standard classifications of accounts, and similar terminology in use. In fact, many trade associations in other industries have promoted the use of standard account classifications for their industry in order to obtain comparability of industry-wide statistics. In public utilities and other closely regulated industries, standard classifications and terminology are even required by law or regulation. Unfortunately, no standard account classification has gained general acceptance throughout the construction industry, although some specialty trades have designed classifications to fit their special needs. However, when building for public utilities


SHEET No.
ACCOUNT
ACCOUNT No.
LITHO IN U S A
SERVICE LINE FORM 1005
STANDARD 8 COL. ANALYSIS GENERAL LEDGER
DATE 19___
DESCRIPTION
POST REF.
CHARGES
CREDITS
BALANCE
DR OR CR
AMOUNT


SHEET NO.
NAME
CREDIT RATING
CREDIT LIMIT
ADDRESS
STANDARD FORM C88 PRINTED IN U S A
REG U S PAT OFF STANDARD BALANCE LEDGER
DATE 19___
DESCRIPTION
POSTING REFERENCE
CHARGES
✓
CREDITS
✓
BALANCE
✓


GENERAL LEDGER
ACCOUNT
SHEET No.
ACCOUNT No.
LITHO IN U S A
SERVICE LINE 810
STANDARD GENERAL LEDGER
DATE 19___
DESCRIPTION
POSTING REF.
CHARGES
✓
CREDITS
✓
DR. OR CR.
BALANCE
✓

and similar clients, it may be necessary to give the client cost figures to fit the required classifications.

In recent years, a number of publishers of accounting forms have offered so-called "ledgerless" systems for small business firms. One such system was published by the Housing and Home Finance Agency under the title "Record Keeping for the Small Home Builder." [1]

Such systems are rarely suitable for any but the very smallest operators, and rarely make adequate provision for keeping track of the cost of each separate job. They usually provide the equivalent of a cash receipts and disbursement record with a colum for each account. At the end of each month the totals of the columns are carried to the financial statement without passing through a ledger. If the operation is small enough to minimize the need for accounting as a tool of management, this type of system is often adequate. When applicable, most ledgerless systems meet the minimum requirements for federal income tax reporting. The best way for a contractor to determine when he has outgrown such a system is to ask himself two questions: (1) How often do I need financial information that I cannot get from the books? (2) How often do I have transactions for which the books make no provision?

If the answer to both questions is "rarely" or "never" then the system is still adequate.

Schedules 15.1–15.4 give several systems of classifications of accounts that may prove useful in illustrating the arrangement, numbering,

Fig. 15.2 (opposite, top) General ledger sheet

This is a standard 11 × 14 in. 3-column sheet with eight analysis columns. It can also be used as a cost ledger with breakdowns for labor, materials and supplies, subcontracts, equipment rental, job overhead, and so on.

Fig. 15.3 (opposite, middle) Accounts receivable ledger sheet

This is a standard 11 × 11 in. form.

Fig. 15.4 (opposite, bottom) General ledger sheet

This is a standard 11 × 14 in. 3-column sheet. Similar rulings are available in various sizes. This size permits a considerable amount of explanation.

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[1] This system may be purchased for $1.25 from the Superintendent of Documents, Government Printing Office, Washington 25, D.C.

and terminology commonly used by construction companies in their general ledgers.

A medium-sized general contractor's classification is shown in Schedule 15.1. Note that in Account 70, provision is made for unbalancing the bid or the payment schedule without distorting job income (Chap. 4). Note too, that this classification may be expanded or contracted to meet the needs of almost any size company.

SCHEDULE 15.1/CLASSIFICATION OF ACCOUNTS FOR MEDIUM-SIZED CONTRACTOR

Adapted from a form designed by Robert Morris Associates, the National Association of Bank Loan Officers and Credit Men

Assets

Account No.	*Account name*
10	Petty cash
11	Cash in bank—general disbursement account
12	Cash in bank—payroll account
13–19	Any special bank accounts
20	Notes receivable for contracts completed
21	Accounts receivable for contracts completed (exclusive of retention)
22	Amounts due on uncompleted contracts (a) Approved by owner's representative (b) Subject to approval by owner's representative (c) Retention
23	Retention due on completed contracts
24	Labor, materials, equipment rentals, and direct overhead charged to jobs and not included in any amount billed. (This account is sometimes called by other names such as "Earned but unbilled" or "Company estimate.")
25	Inventory of materials and supplies not assigned to jobs in progress
26	Deposits for bids and other guarantees
27	Stocks, bonds, and special assessment obligations
28	Other security investments
29	Other receivables
30	Land not used in business
31	Land used in business
32	Buildings
32R	Reserve for depreciation of buildings
33	Construction machinery and equipment
33R	Reserve for depreciation of construction machinery and equipment
34	Trucks and trailers
34R	Reserve for depreciation of trucks and trailers
35	Passenger automobiles, pickups, and jeeps

SCHEDULE 15.1/ACCOUNTS FOR MEDIUM-SIZED CONTRACTOR (Cont.)

Account No.	*Account name*
35R	Reserve for depreciation of passenger automobiles, pickups, and jeeps
36	Tools (other than small tools)
36R	Reserve for depreciation of tools (other than small tools)
37–39	Special fixed asset groupings and related reserves
40	Prepaid insurance and bonds
41	Prepaid taxes, licenses, and fees
42	Expense advances to employees
43	Expendable tools and supplies
44–45	Other prepaid expenses
46	Deferred bidding expense
47–48	Other deferred charges
49	Other assets
	Liabilities
50	Notes payable to banks
	(a) For bid deposits
	(b) For specific jobs
	(c) General borrowing
51	Accounts payable to general trade creditors
52	Accounts, notes, and contracts payable for equipment—current portion
53	Amounts withheld from employees for taxes
	(a) Income taxes withheld
	(b) F. I. C. A. taxes
	(c) State unemployment taxes
54	Accrued taxes payable
	(a) Payroll taxes
	(b) Sales and use taxes
	(c) Property taxes
	(d) Income taxes (for use by corporations only)
	(e) Other taxes
55	Accrued insurance
56	Due to subcontractors on uncompleted contracts
	(a) Current billings
	(b) Retentions
57	Due to subcontractors on completed contracts
	(a) Current billings
	(b) Retentions
58	Currently due to officers and employees (or related individuals and firms)

SCHEDULE 15.1/ACCOUNTS FOR MEDIUM-SIZED CONTRACTOR (Cont.)

Account No.	*Account name*
59	Other current liabilities
60	Noncurrent portion of equipment contracts
61	Long-term loans, mortgages, trust deeds, and so on
62	Other noncurrent liabilities
70	Reserve for unearned income to date on uncompleted contracts
80	Contingent liabilities (memo only)
	Net worth
90	Capital stock (if corporation) Partners' investments (if partnership) Owner's investment (if single proprietorship)
95	Retained earnings
99	Personal accounts (if partnership or proprietorship)
	Income and expense
100	Job revenue taken into income (individual jobs designated by 100.1, 100.2, and so on)
101	Job costs incurred producing job revenue (individual jobs designated by 101.1, 101.2, and so on)
	(a) Labor
	(b) Material
	(c) Subcontracts
	(d) Equipment rental
	(e) Overhead
102	Equipment rentals earned
103	Cost of equipment ownership
	(a) Depreciation
	(b) Maintenance
	(c) Taxes and licenses
	(d) Insurance
	(e) Rental paid to others
	(f) Other costs
105	Income from joint ventures
106	Fees earned on cost-plus-fixed-fee jobs
107	Discounts earned
108	Income from surplus and salvage sales (net)
109–119	Other income accounts as needed
120–199	General and administrative expenses
121	Executive salaries
122	Office salaries and wages

SCHEDULE 15.1/ACCOUNTS FOR MEDIUM-SIZED CONTRACTOR (Cont.)

Account No.	Account name
123	Insurance—general
124	Taxes and licenses
125	Repairs and maintenance
126	Supplies and expendables
127	Postage
128	Telephone and telegraph
129	Depreciation on office and engineering equipment
130	Rent (or comparable ownership costs) and utilities
131	Automobile expense—general office
132	Dues and subscriptions
133	Advertising
134	Travel and promotion
135	Contributions
136	Loss on bad debts
137	Interest
199	Other expenses

In a business large enough to require such an account classification as the one shown in Schedule 15.1, it would be usual to expect subsidiary records of some sort on accounts 21, 22, 23, 24, 33, 33R, 34, 34R, 35, 35R, 52, 57, 58, 100, 101, and 103. All of these might not be required; on the other hand, others might also be needed.

A small contractor's classification is shown in Schedule 15.2. This system would serve the purposes of a small general building contractor using the accrual method.

SCHEDULE 15.2/CLASSIFICATION OF ACCOUNTS FOR SMALL CONTRACTOR

Assets

Account No.	Account name
1	Petty cash
2	Cash in bank
3	Due from customers—current
4	Due from customers—retention
5	Other receivables
6	Prepaid insurance
7	Small tools and supplies

SCHEDULE 15.2/ACCOUNTS FOR SMALL CONTRACTOR (Cont.)

Account No.	*Account name*
8	Other prepaid and deferred items
9	Machinery, equipment, automobiles, and trucks
9R	Reserve for depreciation
10	Other assets
	Liabilities
20	Notes payable
21	Trade accounts payable
22	Due to subcontractors
23	Withheld from employees for taxes (with analysis column for detail)
24	Payroll taxes accrued (with analysis columns for detail)
25	Insurance accrued
26	Other accrued expenses
27	Equipment contracts payable—current portion
29	Other liabilities—current
30	Long-term liabilities
	Net worth
40	Owner's investment
41	Owner's drawing account
	Income
50	Contract revenue on completed jobs (Detail by jobs)
51	Cost of jobs completed (Detail by jobs) (a) Labor (b) Materials (c) Subcontracts (d) Other costs
53	Discounts earned
54	Other income
60	Office salary
61	Office supplies and postage
62	Telephone and telegraph
63	Taxes and licenses
64	Insurance
65	Repairs and maintenance
66	Dues and subscriptions
67	Contributions
68	Advertising and promotion
69	Automobile and truck expense

SCHEDULE 15.2/ACCOUNTS FOR SMALL CONTRACTOR (Cont.)

Account No.	*Account name*
70	Rent and utilities
71	Depreciation on office equipment
72	Interest
79	Other expense
99	Overhead distributed on jobs (credit)

Note that in Schedule 15.2, provision is made to distribute all overhead to jobs. This procedure need not be followed unless it is particularly desired. If accounting were on a cash basis, receivables or payables would not be included.

A large contractor's classification is shown in Schedule 15.3. This classification of accounts is more extensive than that used by many very large contractors. It is useful for a large, diversified general contractor, and provides the skeleton for a very comprehensive and detailed accounting system. Furthermore, it is designed so that it can be expanded or contracted as the need arises.

SCHEDULE 15.3/CLASSIFICATION OF ACCOUNTS FOR LARGE CONTRACTOR

A.	*General ledger accounts*		
	100	*Current assets and prepaid expenses*	
	101	Petty cash	
	102	General disbursement account	
	103	Payroll account	
	104–109	Other special bank accounts	
	110	Billings on construction contracts	
		110.1	Current billings on lump sum contracts
		110.2	Fees billed on C. P. F. F. contracts
		110.3	Costs billed on C. P. F. F. contracts
		110.4	Retained percentages
	112	Other accounts receivable	
		112.1	Due from employees
		112.2	Due from subcontractors
		112.9	Due from others
	115	Reserve for bad debts	
	116	Amounts earned but unbilled on construction work in progress	
	117	Inventory of materials and supplies	
		117.1	Warehouse stock
		117.2	Machine shop parts and supplies
		117.3	Mess hall inventory

SCHEDULE 15.3/ACCOUNTS FOR LARGE CONTRACTOR (Cont.)

- 117.4 Commissary inventory
- 117.5 Camp inventory

- 118 Credits to inventory for outside sales
  - 118.1 Sales of warehouse stock
  - 118.2 Sales of machine shop parts and supplies
  - 118.3 Sales of mess hall inventory
  - 118.4 Sales of commissary inventory
  - 118.5 Sales of camp inventory
- 130 Other current assets
- 150 Prepaid insurance
  - (Subaccounts for each policy and for compensation insurance deposits)
- 151 Employees' expense advances
- 160 Deferred charges—mobilization costs
  - 160.1 Forms
  - 160.2 Access roads and bridges
  - 160.3 Temporary buildings
  - 160.4 Temporary plant installations
  - 160.5 Temporary utility installations
  - 160.6 Incoming freight on plant and equipment
  - 160.7 Unloading, assembling and preparation of equipment for use
  - 160.9 Other move-in costs
- 161 Deferred charges—move-out costs
  - 161.1 Disposal of forms
  - 161.2 Restoration of access roads and bridges
  - 161.3 Removal of temporary buildings
  - 161.4 Dismantling temporary plant
  - 161.5 Removing temporary utility installations
  - 161.6 Outgoing freight on plant and equipment
  - 161.7 Preparation and loading out equipment
  - 161.9 Other move-out costs
- 162 Deferred charges—performance and payment bonds
- 170 Mobilization costs amortized
  - 170.1 Forms
  - 170.2 Access roads and bridges
  - 170.3 Temporary buildings
  - 170.4 Temporary plant installations
  - 170.5 Temporary utility installations
  - 170.6 Incoming freight on plant and equipment
  - 170.7 Unloading, assembling, and preparation of equipment for use
  - 170.8 Performance bonds
  - 170.9 Other move-in costs

SCHEDULE 15.3/ACCOUNTS FOR LARGE CONTRACTOR (Cont.)

- 171 Move-out costs amortized
  - 171.1 Disposal of forms
  - 171.2 Restoration of access roads and bridges
  - 171.3 Removal of temporary buildings
  - 171.4 Dismantling temporary plants
  - 171.5 Removing temporary utility installations
  - 171.6 Outgoing freight on plant and equipment
  - 171.7 Preparation and loading out of equipment
  - 171.9 Other move-out costs
- 180 Expendable tools and equipment
  - 180.1 Construction tools
  - 180.2 Office equipment
  - 180.3 Engineering equipment

200 *Fixed and other assets*

- 250 Equipment
  - 250.1 Construction equipment
  - 250.2 Automobiles, jeeps, and pickup trucks
  - 250.3 Office equipment
  - 250.4 Engineering equipment
- 251 Reserve for depreciation
  - 251.1 Construction equipment
  - 251.2 Automobiles, jeeps, and pickup trucks
  - 251.3 Office equipment
  - 251.4 Engineering equipment
- 290 Other assets
  - 290.1 Utility, transportation and tax deposits
  - 290.2 Returnable container deposits

300 *Liabilities and proprietorship equities*

- 305 Trade accounts payable
- 306 Subcontractor retained percentages
- 308 Accrued payroll
- 310 Payroll taxes accrued
  - 310.1 F. I. C. A. employer's tax
  - 310.2 F. U. I. employer's tax
  - 310.3 S. U. I. employer's tax
- 311 Amounts withheld from employees for taxes and insurance
  - 311.1 F. I. C. A. employee's tax
  - 311.2 Federal income tax withheld
  - 311.3 State income taxes withheld
  - 311.4 H&A insurance—alternate to state
- 312 Accrued insurance based on payrolls
  - 312.1 Workmen's compensation
  - 312.2 General liability
  - 312.3 Excess liability

SCHEDULE 15.3/ACCOUNTS FOR LARGE CONTRACTOR (Cont.)

	313		Other state and local taxes accrued
		313.1	Sales and use taxes
		313.2	City and county business
		313.3	Real and personal property taxes
	330		Other accrued liabilities
	340		C. P. F. F. revolving fund
	350		Unearned revenue deferred
	380		Capital stock (or partners' capitals or proprietor's equity)
	385		Retained earnings (unallocated)
	390		Advances to jobs
		390.1	Cash
		390.2	Other assets
	391		Interest and overhead reimbursement from jobs
		391.1	Interest
		391.2	Overhead
	392		Accumulated earnings on jobs
	393		Withdrawals from jobs
		393.1	Advances
		393.2	Interest and overhead
		393.3	Accumulated earnings
500			*Income and costs*
	501		Contract revenue
		501.1	Progress billings submitted
		501.2	Estimated contract revenue earned but unbilled
		501.9	Revenue deferred to compensate for unbalanced bid (debit)
	505		Fees earned on C. P. F. F. contracts
	506		Revenue from reimbursable costs on C. P. F. F. contracts
	509		Revenue from services
		509.1	Repairs and maintenance of equipment for subcontractors
		509.2	Repairs to rented equipment chargeable to owners
		509.9	Other income from services
	510		Equipment rentals earned
	512		Allocated materials and equipment furnished by owner on C. P. F. F. jobs
	520		Income from sales of fixed assets
	540		Other income
	551		Construction costs—work items
		551.1	Labor
		551.2	Materials
		551.3	Subcontracts
		551.4	Equipment costs
		551.5	Other direct costs

SCHEDULE 15.3/ACCOUNTS FOR LARGE CONTRACTOR (Cont.)

        - 551.7 Bonds—performance and payment
        - 551.8 Allocated work items
        - 551.9 Overhead allocated
    - 555 Nonreimbursable costs—C. P. F. F. jobs
    - 559 Cost of services performed for others
        - 559.1 Cost of repair and maintenance of equipment for subcontractors
        - 559.2 Repairs to rented equipment chargeable to owners
        - 559.9 Cost of other services
    - 560 Costs applicable to equipment rented to others
    - 562 Reasonable value of materials and equipment furnished by owner on C. P. F. F. jobs
    - 563 Reimbursable costs on C. P. F. F. jobs
    - 570 Equipment costs
        - 570.1 Rentals paid to others
        - 570.2 Depreciation on owned equipment
        - 570.3 Repairs and maintenance—labor
        - 570.4 Repairs and maintenance—materials and supplies
        - 570.5 Fuel and lubrication
        - 570.6 Taxes and licenses
        - 570.7 Insurance
        - 570.8 Distributable costs
        - 570.9 Other equipment costs
    - 571 Equipment costs charged to work items
- 600 *Bidding expenses*
    - 601 Estimating salaries
    - 605 Bidding expense charged by joint ventures and others
- 800 *Overhead*
    - 801 Salaries
        - 801.1 Executive and supervisory
        - 801.2 Engineering
        - 801.3 Accounting and clerical
        - 801.4 Warehouse
    - 802 Stationery supplies and expendable equipment
    - 803 Depreciation on office and engineering equipment
        - 803.1 Office equipment
        - 803.2 Engineering equipment
    - 804 Automobile expense
        - 804.1 Gas, oil, grease, etc.
        - 804.2 Tires and repairs
        - 804.3 Depreciation
        - 804.4 Insurance
        - 804.5 Taxes and licenses
        - 804.6 Other auto expenses
    - 805 Executive and employee expense accounts

SCHEDULE 15.3/ACCOUNTS FOR LARGE CONTRACTOR (Cont.)

806	Professional services	
807	Rent	
	807.1	Office, etc.
	807.2	Equipment
808	Telephone and telegraph	
809	Taxes	
	809.1	Payroll taxes on employer
	809.2	Property taxes
	809.3	Business licenses, etc.
	809.9	Other taxes
810	Insurance and bonds	
	810.1	Workmen's compensation
	810.2	Public liability and property damage
	810.3	Equipment floater
	810.4	Fidelity, position, and forgery bonds
	810.5	Performance, payment, and bid bonds
	810.6	Fire and comprehensive
	810.7	Builder's risk
	810.9	Other
812	Repairs and maintenance	
	812.1	Office and engineering equipment
	812.2	Building and grounds
	812.3	General cleanup
813	Postage	
814	Dues, subscriptions, contributions and local advertising	
	814.1	Dues and subscriptions
	814.2	Contributions
	814.3	Local advertising
815	Loss on bad debts	
849	Miscellaneous general expense	
850	Commissary	
	850.1	Sales (credit)
	850.4	Other commissary revenue (credit)
	850.5	Cost of sales (debit)
	850.6	Salaries and wages (debit)
	850.9	Depreciation—commissary equipment (debit)
	850.10	All other commissary expense (debit)
851	Mess Hall	
	851.1	Sales (credit)
	851.3	Received from subcontractors (credit)
	851.4	Other mess hall revenue (credit)
	851.5	Cost of food sold (debit)
	851.6	Salaries and wages (debit)
	851.7	Laundry and cleaning (debit)

SCHEDULE 15.3/ACCOUNTS FOR LARGE CONTRACTOR (Cont.)

- 851.8 Expendable supplies—amortization (debit)
- 851.9 Depreciation—mess hall equipment (debit)
- 851.10 All other mess hall expense (debit)

852 Camp
- 852.2 Bunk rentals (credit)
- 852.3 Received from subcontractors (credit)
- 852.4 Other revenue (credit)
- 852.6 Camp salaries and wages (debit)
- 852.7 Laundry and cleaning (debit)
- 852.8 Amortization—linen, bedding, etc. (debit)
- 852.9 Depreciation—camp equipment (debit)
- 852.10 All other camp expenses (debit)

853 First aid
- 853.3 Received from subcontractors (credit)
- 853.4 Other revenue (credit)
- 853.6 Salaries and wages (debit)
- 853.7 Laundry and cleaning (debit)
- 853.8 Expendable supplies (debit)
- 853.9 Depreciation—first aid equipment (debit)
- 853.10 All other first aid expenses (debit)

854 Residences
- 854.2 Rentals of residences furnished employees (credit)
- 854.3 Received from subcontractors (credit)
- 854.4 Other revenue from residences (credit)
- 854.6 Salaries and wages (debit)
- 854.7 Laundry and cleaning (debit)
- 854.8 Amortization of linens, dishes, etc. (debit)
- 854.9 Depreciation—residences (debit)
- 854.10 All other residence expense including rent (debit)

855 Protection—guards and firemen
- 855.3 Received from subcontractors (credit)
- 855.6 Salaries and wages of guards, firemen, etc. (debit)
- 855.8 Expendable equipment (debit)
- 855.9 Depreciation—protection equipment (debit)
- 855.10 All other protection expense (debit)

890 All other income and expense

899 Overhead allocated to work items

B. *Cost Accounts*
- 01 Direct labor
- 02 Materials
- 03 Subcontracts
- 04 Equipment costs
- 05 Allocated work items
- 06 Overhead allocated

On each job there is a cost ledger with a columnar sheet for each work item. Each of these job site ledgers has a summary controlling account with columns for each of these items. The summary of these job ledger controlling accounts balances with the corresponding accounts in the main office general ledger. If the job accounts are centralized the situation would be about the same except that the job cost ledgers could be controlled directly if desired.

A decentralized accounting classification, for a medium-sized to large job, is shown in Schedule 15.4. If the jobs keep their own accounts, it is a good idea, wherever possible, to have the general ledger account numbers in the job ledger identical with those in the company's general ledger. Note that in this classification there are no reserves for depreciation as such. Instead, the account which is credited contra to the charge to the cost accounts for equipment depreciation is called "Depreciation charged to job." Note too, that this classification is applicable to lump sum, unit price, or cost-plus-fixed-fee jobs. Use of letters combined with numbers is intended to reduce errors in account designations when coding accounting data.

SCHEDULE 15.4/CLASSIFICATION OF ACCOUNTS FOR DECENTRALIZED, MEDIUM-SIZED TO LARGE JOBS

A. Cash
    100 Office cash (petty cash)
    101 Job payroll bank account
    102 Job general bank account
B. Receivables
    111 Progress billings approved
    112 Progress billings awaiting approval
    113 Amounts earned but unbilled
    114 Due from employees
    115 Miscellaneous receivables
    116 Fees (on C.P.F.F. jobs) receivable
    117 Reimbursable costs billed
    118 Reimbursable costs unbilled
    119 Reimbursable costs accrued
C. Inventories
    120 Warehouse inventories
D. Operations of job site shops and plants
    130 Shop operations cost
        .1 Labor
        .2 Materials
        .3 Cost of providing job-owned equipment
        .4 Equipment rentals

SCHEDULE 15.4/ACCOUNTS FOR DECENTRALIZED JOBS (Cont.)

- .5 Supplies and small tools
- .6 Subcontracts
- .7 Distributable expense (general overhead)

140 Shop operations charged to job costs (credit)

150 Production plant operations cost
- .1 Labor
- .2 Materials
- .3 Cost of providing job-owned equipment
- .4 Equipment rentals
- .5 Supplies and small tools
- .6 Subcontracts
- .7 Distributable expense

160 Cost of materials produced and charged to job costs (credit)

E. Deferred charges and other assets
- 170 Cost of temporary structures and special plant charges
- 180 Cost of temporary structures charged to job costs (credit)
- 190 General expense
- 199 General expense distributed to job costs (credit)
- 200 Refundable deposits
- 210 Returnable containers
- 220 Debit items held in temporary suspense

F. Equipment owned by the job
- 250 Cost of major equipment (items costing over $1,000 each)
- 252 Depreciation on major equipment charged to job costs (credit)
- 260 Salvage value (15 per cent) of cost of minor equipment .
- 261 Depreciable cost of minor equipment
- 262 Depreciation on minor equipment charged to job costs (credit)

G. Current accounts payable
- 300 Vouchers payable—general
- 301 Amounts currently due to subcontractors
- 302 Retained percentages due to subcontractors
- 303 Advances received from owner
- 306 Group insurance premiums deducted from payroll
- 307 Charitable contributions deducted from payroll
- 308 Payroll savings bond deductions

H. Payroll taxes—employee deductions and employer taxes
- 310 Federal income tax withheld
- 311 State and local income tax withheld
- 312 Federal Insurance Contributions Act (Social Security)
- 313 F.I.C.A. tax—employer's tax
- 314 State unemployment insurance tax withheld from employees
- 315 State unemployment tax—employer's tax
- 316 Federal unemployment excise tax

SCHEDULE 15.4/ACCOUNTS FOR DECENTRALIZED JOBS (Cont.)

- I. Accrued taxes and insurance
  - 320 Real and personal property taxes
  - 321 State and local sales, use, and excise taxes
  - 322 State and local excise taxes, licenses and fees
  - 325 Special state and local personal taxes (poll taxes, etc.)
  - 330 Workmen's compensation insurance
  - 331 Public liability and property damage insurance
  - 332 Employer's liability and occupational disease insurance
  - 333 Builder's risk insurance
- J. Other accrued liabilities
  - 340 Accrued payroll
  - 341 Accrued utilities and power bills
  - 345 Accrued union dues deducted from payroll
  - 346 Accrued union health and welfare fund payments
  - 347 Accrued medical and hospitalization insurance
  - 349 Unclaimed wages
- K. Reserves
  - 350 Reserve for dismantling and move-out
  - 351 Reserve for major repairs and reconditioning of equipment
  - 352 Reserve for seasonal shut-downs
  - 353 Reserve for credit items held temporarily in suspense
- L. Deferred credits to income
  - 360 Amounts billed to owners for uncompleted work
- M. Head office equity in job
  - 370 Cash advanced to job by head office
  - 371 Excess of billings for completed work over related costs (job operating profit)
  - 375 Cash repaid to head office (debit)
  - 376 Losses chargeable to extraordinary conditions (debit)
  - 377 Amounts charged to job for interest on advances and for head office overhead (debit)
- N. Operating revenue and costs—lump sum and unit price jobs
  - 400 Progress billings approved
  - 401 Progress billings awaiting approval
  - 402 Amounts earned but not yet billed
  - 405 Cost of contract work billed or billable
  - 409 Miscellaneous contract revenue
- O. Operating revenue and costs—cost-plus-fixed-fee jobs
  - 410 Contractor's fee
  - 411 Reimbursable costs
  - 412 Allocated materials and equipment furnished by client
  - 415 Nonreimbursable costs
- P. Nonoperating revenue and costs
  - 420 Equipment rentals
  - 421 Costs chargeable to equipment rental income

SCHEDULE 15.4/ACCOUNTS FOR DECENTRALIZED JOBS (Cont.)

425		Gain or loss on sales of equipment
426		Gain or loss on sales of surplus materials and scrap
427		Undistributed equipment operations cost
	.1	Operating labor
	.2	Repair and servicing labor
	.3	Repair parts
	.5	Outside repairs and other repair costs
	.6	Fuel, oil, grease, power
	.7	Other supplies and costs (Note: All equipment operating costs are charged to Account 427 and are allocated to appropriate cost accounts on an hourly basis. Any undistributed balance may remain in Account 427 or may be transferred to general expense.)
450		Miscellaneous gains and losses

Integration of subsidiary records

Using the general ledger account classification in Schedule 15.4 as a basis, the integration of subsidiary records is illustrated below.

The subsidiary ledger for account C120, "Warehouse inventory," might contain such items as the following:

C1201	Acoustical tile
1202	Aggregate and sand—purchased
1203	Blocks—concrete and pumice
1204	Brick—red, fire, concrete
1205	Bolts, nuts, and screws
1206	Cable
1207	Camp supplies and equipment
1208	Cement
1209	Chimney tile
1210	Conduit and fittings
1211	Doors, frames, and hardware
1212	Drilling supplies and equipment
1213	Electrical supplies and equipment
1214	Fuel, oil and grease
1215	Hardware—form, rough, miscellaneous
1216	Lumber—rough, finish, and moulding
1217	Masonry and plastering supplies
1218	Miscellaneous stores
1219	Nails
1220	Painting and glazing materials
1221	Plumbing, heating, and air conditioning materials and supplies
1222	Powder, caps and blasting supplies
1223	Roofing and sheet metal materials and supplies
1224	Small tools
1225	Steel—reinforcing
1226	Steel—structural, shop repair, tool, etc.
1227	Tile—asphalt, glazed, clay, cement

1228	Tires and tubes
1229	Welding supplies
1230	Window sash, frames and fittings
1231	Commissary supplies
1232	Mess hall supplies and equipment
1233	Camp and bunk house supplies and equipment
1298	Repair parts (with subaccounts for each part)
1299	Permanent materials (not shown above)

The job may not be large enough to require more than one or two shops, so that Account 130 would need no subsidiary accounts. On the other hand there might be, on a particular job, any or all of the following:

D1301	Automobile and truck repair shop
1302	Blacksmith shop
1303	Concrete testing laboratory
1304	Electrical shop
1305	Machine and equipment repair shop
1306	Paint shop
1307	Planing mill and woodworking shop
1308	Plumbing, heating, and sheet metal shop
1309	Tire and battery shop

Similarly, a large job might produce its own aggregate, or batch its own concrete, but it is unlikely that more than one or two plants would be covered by Account 150. If there were only two or three plants they could be covered by Accounts 150, 151, and 152. This method could work for as many as ten plants, which would be more than even the average large job would require. However, if more were needed there could be a subsidiary ledger controlled by account number 150 with the numbers starting at 1501 and going through 1599.

Account 170, "Cost of temporary structures," may require a subsidiary ledger, but not if there is only a small, removable job office or a tool shack; or if the cost is not too great in relation to the whole job, since all temporary structures must be written off during the life of the job. If some temporary structures are a charge against the job as a whole, whereas others affect only certain work items, it may be necessary to have a subsidiary ledger controlled by Account 170. Some of the accounts such a ledger might be expected to contain are:

E1701	Job office building
1702	Warehouse
1703	Auto and truck repair shop
1704	Blacksmith shop
1705	Laboratory
1706	Electrical shop
1707	Machine and equipment repair shop
1708	Paint shop
1709	Planing mill and woodworking shop
1710	Plumbing, heating, and air conditioning shop
1711	Tire and battery shop
1712	Commissary
1713	Mess hall

1714 Bunk houses
1715 Residences
1716 Hospital and first aid buildings
1717 Garages
1718 Gasoline station
1719 School
1720 Powder house
1721 Electrical generator house
1722 Compressor building
1723 Time shacks
1724 Trailer camp
1725 Site grading
1726 Access and camp roads and bridges
1727 Maintenance of access and camp roads and bridges
1728 Air production plant
1729 Crushing and separation plant
1730 Aggregate plant
1731 Asphalt plant
1732 Asphalt storage
1733 Concrete batch plant
1734 Cement storage
1735 Crane and cableways
1736 Concrete placing structures
1737 Refrigerator plant
1738 Dewatering system
1739 Water storage and distribution
1740 Electrical generators and distribution system
1790 Plant move-in and erection
1791 Plant move-out and dismantling

Each of these accounts would have the following breakdown:

.1 Labor
.2 Materials
.3 Cost of providing job-owned equipment
.4 Equipment rentals
.5 Supplies and small tools
.6 Subcontracts
.7 Distributable expense

The next account that would be likely to require a subsidiary ledger is Account 190, "General expense." There are a good many ways in which the accounts in this ledger might be shown and segregated, for example:

E1901 Salaries and wages
1902 Supplies and expendable equipment
1903 Rent
1904 Maintenance and repairs
1905 Photography and reproduction
1906 Automobile and truck expense
1907 Depreciation (or equipment rental)
1908 Surety bond premiums
1909 Outside professional services
1910 Radio communications
1921 Insurance (other than payroll)
1922 Telephone and telegraph
1923 Heat, light, fuel, and janitor service
1924 Travel expense—operational
1925 Mobilization travel
1926 Employee transportation
1927 Contributions
1928 Promotion, entertainment, and advertising
1929 Bank charges
1930 Head office interest and overhead
1931 Licenses, taxes, permits, and fees
1941 Gain or loss on commissary
1942 Gain or loss on mess hall
1943 Gain or loss on camp operation

1944 Gain or loss on residence and trailer camp
1945 Cost of free meals furnished in mess halls
1980 Cash discounts earned (credit)
1990 Miscellaneous general expense

Some of the larger companies that keep more extensive segregations will have further breakdowns within the accounts. For example, Accounts E1901 to E1919 might have the following breakdown on the ledger sheet:

.1 Management and supervision
.2 Engineering
.3 Accounting, warehouse, purchasing, and payroll
.4 Labor relations and safety
.5 Plant protection—guards and firemen
.9 All other

Accounts E1941 to E1949 might have the following breakdown:

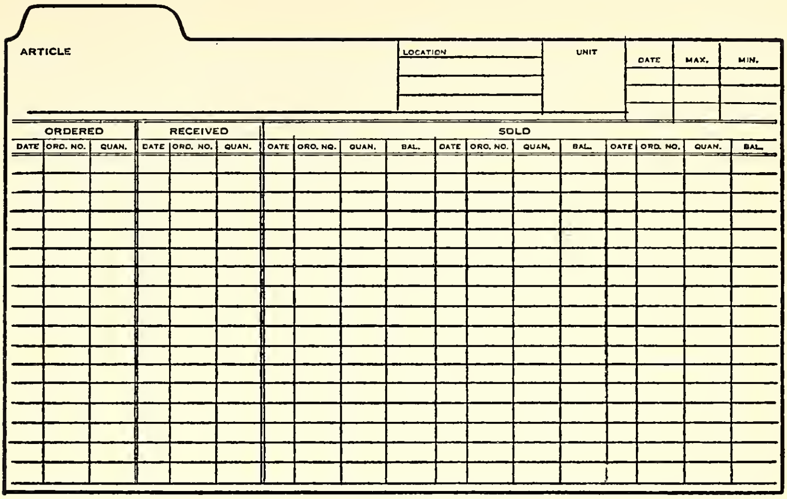
.1 Operating labor
.2 Supplies and expense
.3 Plant amortization
.4 Equipment depreciation or rental
.5 Cost of commodity or service sold
.6 Revenue from sales of commodity or service
.7 Gain or loss transferred to control account

Account F250, "Cost of major equipment," and Accounts F260 and F261 covering the cost of minor equipment, would have subsidiary ledgers according to individual units or types of assets depending upon the system in use. Of course the related reserves for depreciation in Accounts F252 and F262 would appear on the same ledger. Visible-index ledgers are useful for the equipment ledgers.

Normally, the open file of vouchers payable gives adequate support to the vouchers payable account. Subcontractors' accounts, on the other hand, if there are more than two or three, should be kept in a subcontractors' ledger (Fig. 11.2). In this account classification, the amount in Account G301 would equal the total of all the amounts currently due subcontractors as shown on the individual ledger sheets. In the same way, Account G302 would control the retained percentages shown by the individual subcontractor accounts.

Account G308, "Withheld for payroll savings bonds," would require a subsidiary ledger in the name of each employee from whom money had been withheld and for whom bonds had not yet been purchased.

The most important subsidiary ledger of all is the job cost ledger, which is made up of the various work items and controlled by Account N405. Illustrations of the types of accounts which might be found in this ledger are given in Chap. 4. Often the job cost ledger



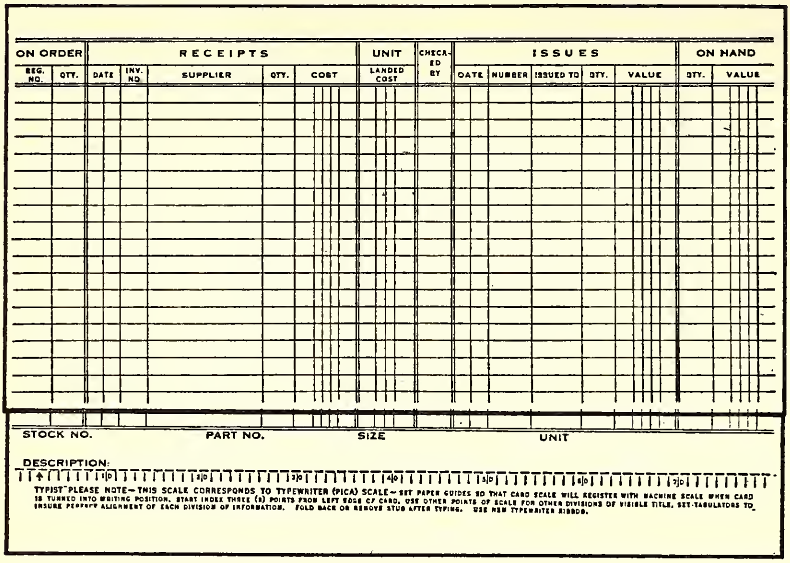
ARTICLE	LOCATION	UNIT	DATE	MAX.	MIN.

ORDERED			RECEIVED			SOLD											
DATE	ORD. NO.	QUAN.	DATE	ORD. NO.	QUAN.	DATE	ORD. NO.	QUAN.	BAL.	DATE	ORD. NO.	QUAN.	BAL.	DATE	ORD. NO.	QUAN.	BAL.

Fig. 15.5 Inventory card

will contain a column to show how much of the contract price has been taken into income for each work item. This income might be broken down, as it is in the general ledger, among Accounts N400, N401, and N402. As a practical matter, it is better to use only the account with approved progress billings (in this classification, Account N400) as the controlling account, and to establish the unapproved and unearned balances by journal entry at the end of each month. At the first of the next month, they are reversed and posted in the usual way and there is no duplication. The figures shown on the combined statement of costs and revenues (Chap. 16) as earnings for the month will usually consist of the billings awaiting approval, plus the amounts earned but unbilled, plus (or minus) any adjustments made when the unapproved billings from the preceding month were approved. The "job-to-date" figures of the statement of costs and revenue will be the total of all three accounts (in this illustration, Accounts N400, N401, and N402) broken down into the individual work items to which they apply.

Location of records: In a fully centralized system all the accounts, including both the general and subsidiary ledgers, will be kept in the general office. In a fully decentralized system the general ledger for the job and all the subsidiary records would be kept in the job office, and the company's general ledger kept in the head office will show only the company's net investment in the job, represented in



ON ORDER		RECEIPTS					UNIT	CHECKED BY	ISSUES					ON HAND	
REG. NO.	QTY.	DATE	INV. NO.	SUPPLIER	QTY.	COST	LANDED COST		DATE	NUMBER	ISSUED TO	QTY.	VALUE	QTY.	VALUE

STOCK NO. PART NO. SIZE UNIT

DESCRIPTION:

TYPIST—PLEASE NOTE—THIS SCALE CORRESPONDS TO TYPEWRITER (PICA) SCALE—SET PAPER GUIDES SO THAT CARD SCALE WILL REGISTER WITH MACHINE SCALE WHEN CARD IS TURNED INTO WRITING POSITION. START INDEX THREE (3) POINTS FROM LEFT EDGE OF CARD. USE OTHER POINTS OF SCALE FOR OTHER DIVISIONS OF VISIBLE TITLE. SET TABULATORS TO INSURE PERFECT ALIGNMENT OF EACH DIVISION OF INFORMATION. FOLD BACK OR REMOVE STUB AFTER TYPING. USE NEW TYPEWRITER RIBBON.

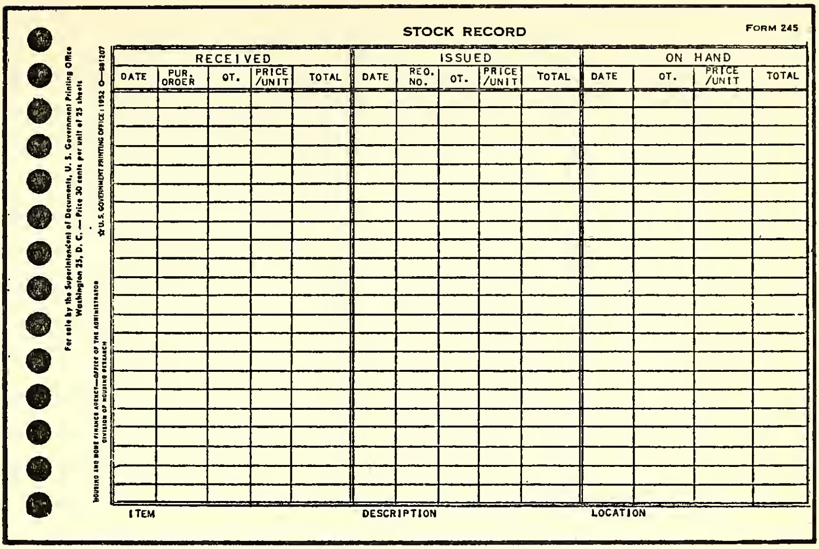
Fig. 15.6 Stock card for visible-index use

Schedule 15.4 by accounts in Section M (370, 371, 375, 376, and 377). In a hybrid system it is not uncommon to find the general ledger kept in the head office, and the subsidiary ledgers kept at the job site. If a job is large enough to require any substantial amount of job site accounting, this method makes fairly good sense because it is at the job site that the detail is most likely to be used.

Investment: Often the investment in the job will be treated as a receivable in the head office accounting. This treatment is based on the theory that improvements to real property belong to the landowners. Hence the company's asset is more like a receivable, secured by lien rights, than an inventory item.

Treatment of investments in jobs as an inventory item is more in keeping with the general accounting concept that the company is selling a completed job to the owner. This treatment has the advantage of representing the position of a going concern somewhat more accurately than the receivable treatment, although admittedly not quite so accurately from a liquidating viewpoint. Actually it makes little difference which theory is followed so long as the nature of the item is clearly described in the account title.

A third method is to treat the investment in jobs as an investment. This is rarely an appropriate treatment. The very term "investment"



STOCK RECORD

FORM 245

RECEIVED					ISSUED					ON HAND			
DATE	PUR. ORDER	QT.	PRICE /UNIT	TOTAL	DATE	REQ. NO.	QT.	PRICE /UNIT	TOTAL	DATE	QT.	PRICE /UNIT	TOTAL

ITEM DESCRIPTION LOCATION

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Fig. 15.7 Stock card for prong binder

implies that the item is unrelated to operations, so that the result of such treatment is often misleading. One exception to this characterization might be cash contributed to a joint venture that is expected to continue for a considerable period.

Forms: Illustrated are a number of sample forms for the general ledger and subsidiary ledgers (Fig. 15.1–15.7) with comments on when and how they are used. The ones shown here are all designed to be hand-kept, as are most of the ledgers used by construction companies. Forms for use with bookkeeping machines are shown in Chap. 22, which discusses machine accounting in detail.

A ledger need not take the form of a book. It can be a tub of cards like those used with bookkeeping machines, or a box or tray of cards (Fig. 9.3, 15.5). These cards illustrate a type of subsidiary ledger that reports units without specific cash reference. Supported by occasional physical inventories, they provide important management information without the cost usually associated with perpetual inventories. If there are as many as 100 accounts in a ledger, particularly a subsidiary ledger, it may pay to use some visible-index system (Fig. 15.6, 15.7).

16

Financial and Cost Reporting

It is the purpose of financial and cost statements to group significant facts in such a way that the person reading them can form an accurate judgment of the financial condition of the company and the results of its operations. In the past, there has been a tendency to group the figures on construction company statements in the same way that they are grouped on the statements of a manufacturing company, and, in general, to interpret the results as if they were the results of a manufacturing process. To some extent, construction is like manufacturing, but the differences between the two are important enough so that accounting statements prepared and interpreted by manufacturing standards are seriously misleading.

For example, the amounts due from customers of most manufacturers represent the selling price of goods sold and shipped. Except for the usual proportion of bad and slow accounts, they may reasonably be expected to be converted into cash in from 30 to 90 days. The amounts currently due from a contractor's customers may, in some respects, be more like loans than sales because the right to keep the money is often contingent upon completing the job at a profit. Then, too, some part of the receivables of a contractor may be retained percentages that may not be collectible for many months, and possibly, on some jobs, for several years.

Another example of this distinction is the treatment of inventories. In manufacturing, inventories are owned by the company, and on liquidation constitute an asset. In construction, the only true inventories are materials, parts, and supplies that have not yet been applied to a contract. The biggest item is work in process, and since this usually consists of improvement to someone else's land, it cannot be owned. On liquidation, jobs in process may be a liability instead of an asset. On the other hand, once completed, the value, even on liquidation, is more firmly fixed because of lien laws (on private work) and bonding laws (on public work).

Another important difference is in the net profit figure. Even with such refinements as last-in, first-out inventory valuation and replacement-cost depreciation, the computation of profit on manufacturing operations is fairly well standardized. In construction, there may be profits based on the so-called "cash basis" method of accounting, or on the so-called "straight accrual" method, or on the "completed-contract" or "percentage-of-completion" variations of the accrual method. In any particular company, especially if joint ventures are involved, it is possible to find some parts of the final profit figure arrived at by each of these methods.

Financial statement ratios also differ. One of the most important factors in the analysis of a construction company's statements is the amount of uncompleted work under contract, and its ratio to net working capital and to total net worth. In a manufacturing company's statement, the total backlog would be interesting but not vital.

Management

It is to be expected that the most detailed use of a company's financial statements will be made by the management of the company itself. For example, aggressive management will use the financial statements as a starting point for planning the company's operation many months in advance. Individual jobs will be analyzed to see when the money, the personnel, and the equipment committed to them may be released. On the basis of that analysis, management will look at the jobs being offered for bid to see which ones should be bid, and how small a margin of profit the company is willing to accept to win them.

Management will also consider the effect of the statements on borrowing and bonding capacity, and determine what its policies will be on those aspects of its financing. Management will be seeking answers, in the financial statements, to questions of the effects of the company's policies on such matters as subcontracting and the ownership of equipment.

Whenever past performance provides a basis for present policies and future planning, sound management will start with its financial statements. A number of examples of how this procedure is followed is given in Chap. 2. Here emphasis is given to the form that the financial reports take.

Some contractors still express a mild form of contempt for the "paper mill" (the office) and its products. These are the contractors who boast that they can "guess closer than those clerks can figure." They are also the contractors who curse the "stupidity" of their estimators when they lose money on a job and who call their bankers and bondsmen "shortsighted" when they refuse to underwrite the contractor's less fortunate guesses.

In this chapter several typical statement forms and their supporting schedules are illustrated. Of particular interest is the form released by Robert Morris Associates (Fig. 16.1). There are very few contractors who could not improve their statements by incorporating into their own financial reporting some of the principles of statement structure illustrated in that form.

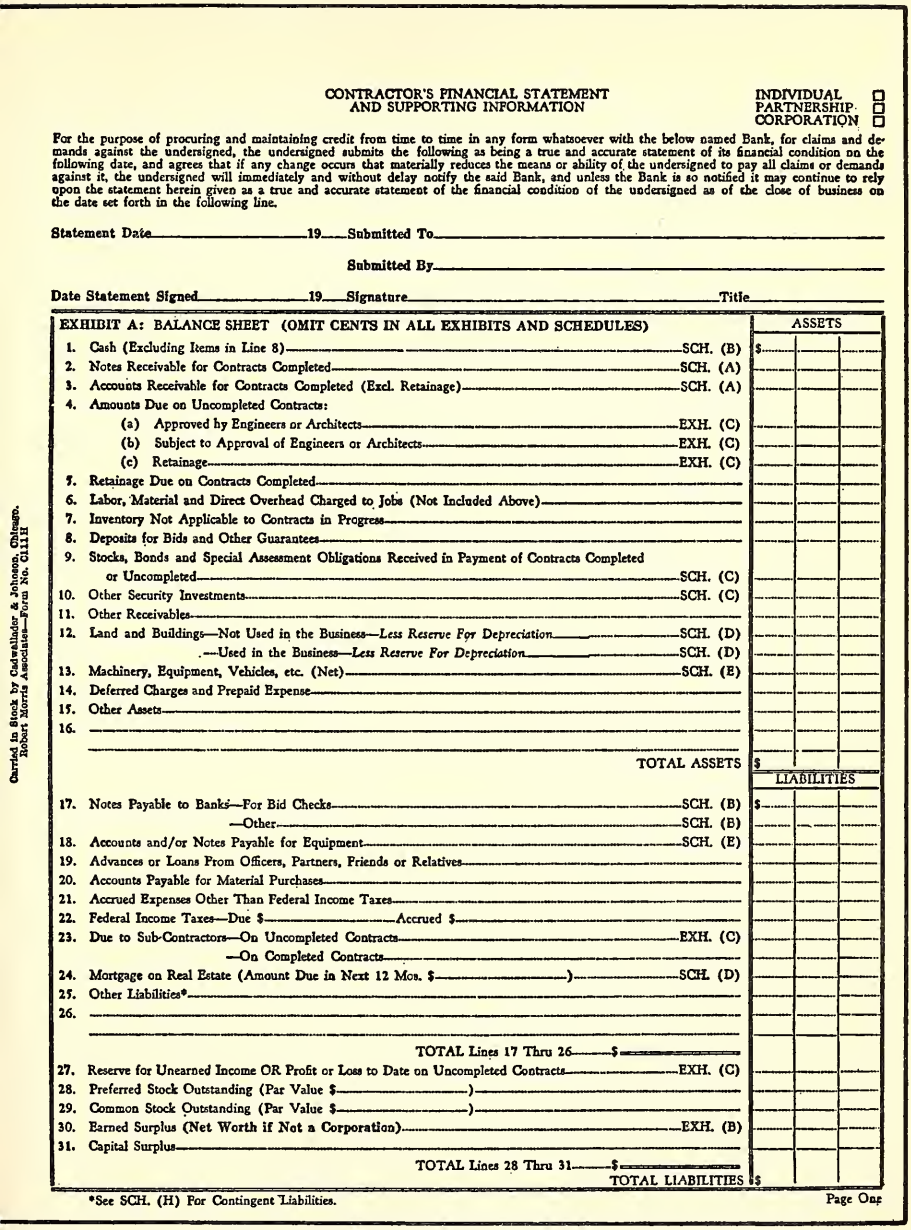
Bankers and bonding companies

Contracting is, at best, a risky business, and it usually involves large sums of money. For these reasons alone, many banks and some surety companies have been reluctant to lend money to contractors or to bond their jobs. As one banker puts it: "There are too many things that can go wrong; too few contractors who know anything about banking; and too few accountants who know anything about either construction or banking."

In recent years there has been a considerable effort on the part of the professional and trade associations serving the accounting profession, the banks, the surety companies and the contractors to reach a common understanding. Typical of these efforts are the following:

1. Release by the American Institute of Certified Public Accountants of its *Accounting Research Bulletins* 43 (dealing with accounting for cost-plus-fixed-fee construction contracts) and 45 (dealing with methods of accounting for long-term contracts). These bulletins are quoted in Chap. 2.

2. The release by Robert Morris Associates of a standard form (Fig. 16.1)—"Contractor's financial statement and supporting information."



CONTRACTOR'S FINANCIAL STATEMENT
AND SUPPORTING INFORMATION

INDIVIDUAL ☐
PARTNERSHIP ☐
CORPORATION ☐

For the purpose of procuring and maintaining credit from time to time in any form whatsoever with the below named Bank, for claims and demands against the undersigned, the undersigned submits the following as being a true and accurate statement of its financial condition on the following date, and agrees that if any change occurs that materially reduces the means or ability of the undersigned to pay all claims or demands against it, the undersigned will immediately and without delay notify the said Bank, and unless the Bank is so notified it may continue to rely upon the statement herein given as a true and accurate statement of the financial condition of the undersigned as of the close of business on the date set forth in the following line.

Statement Date__________19___Submitted To__________

Submitted By__________

Date Statement Signed__________19___Signature__________Title__________

	EXHIBIT A: BALANCE SHEET (OMIT CENTS IN ALL EXHIBITS AND SCHEDULES)		ASSETS		
1.	Cash (Excluding Items in Line 8)	SCH. (B)	$		
2.	Notes Receivable for Contracts Completed	SCH. (A)			
3.	Accounts Receivable for Contracts Completed (Excl. Retainage)	SCH. (A)			
4.	Amounts Due on Uncompleted Contracts:				
	(a) Approved by Engineers or Architects	EXH. (C)			
	(b) Subject to Approval of Engineers or Architects	EXH. (C)			
	(c) Retainage	EXH. (C)			
5.	Retainage Due on Contracts Completed				
6.	Labor, Material and Direct Overhead Charged to Jobs (Not Included Above)				
7.	Inventory Not Applicable to Contracts in Progress				
8.	Deposits for Bids and Other Guarantees				
9.	Stocks, Bonds and Special Assessment Obligations Received in Payment of Contracts Completed or Uncompleted	SCH. (C)			
10.	Other Security Investments	SCH. (C)			
11.	Other Receivables				
12.	Land and Buildings—Not Used in the Business—*Less Reserve For Depreciation*	SCH. (D)			
	—Used in the Business—*Less Reserve For Depreciation*	SCH. (D)			
13.	Machinery, Equipment, Vehicles, etc. (Net)	SCH. (E)			
14.	Deferred Charges and Prepaid Expense				
15.	Other Assets				
16.					
	TOTAL ASSETS		$		
			LIABILITIES		
17.	Notes Payable to Banks—For Bid Checks	SCH. (B)	$		
	—Other	SCH. (B)			
18.	Accounts and/or Notes Payable for Equipment	SCH. (E)			
19.	Advances or Loans From Officers, Partners, Friends or Relatives				
20.	Accounts Payable for Material Purchases				
21.	Accrued Expenses Other Than Federal Income Taxes				
22.	Federal Income Taxes—Due $_____ Accrued $_____				
23.	Due to Sub-Contractors—On Uncompleted Contracts	EXH. (C)			
	—On Completed Contracts				
24.	Mortgage on Real Estate (Amount Due in Next 12 Mos. $_____)	SCH. (D)			
25.	Other Liabilities*				
26.					
	TOTAL Lines 17 Thru 26 $				
27.	Reserve for Unearned Income OR Profit or Loss to Date on Uncompleted Contracts	EXH. (C)			
28.	Preferred Stock Outstanding (Par Value $_____)				
29.	Common Stock Outstanding (Par Value $_____)				
30.	Earned Surplus (Net Worth if Not a Corporation)	EXH. (B)			
31.	Capital Surplus				
	TOTAL Lines 28 Thru 31 $				
	TOTAL LIABILITIES		$		

*See SCH. (H) For Contingent Liabilities.

Page One

Carried in Stock by Cadwallader & Johnson, Chicago.
Robert Morris Associates—Form No. C111H

Fig. 16.1 Contractor's financial statement and supporting information

Robert Morris Associates form can be used by most contractors.

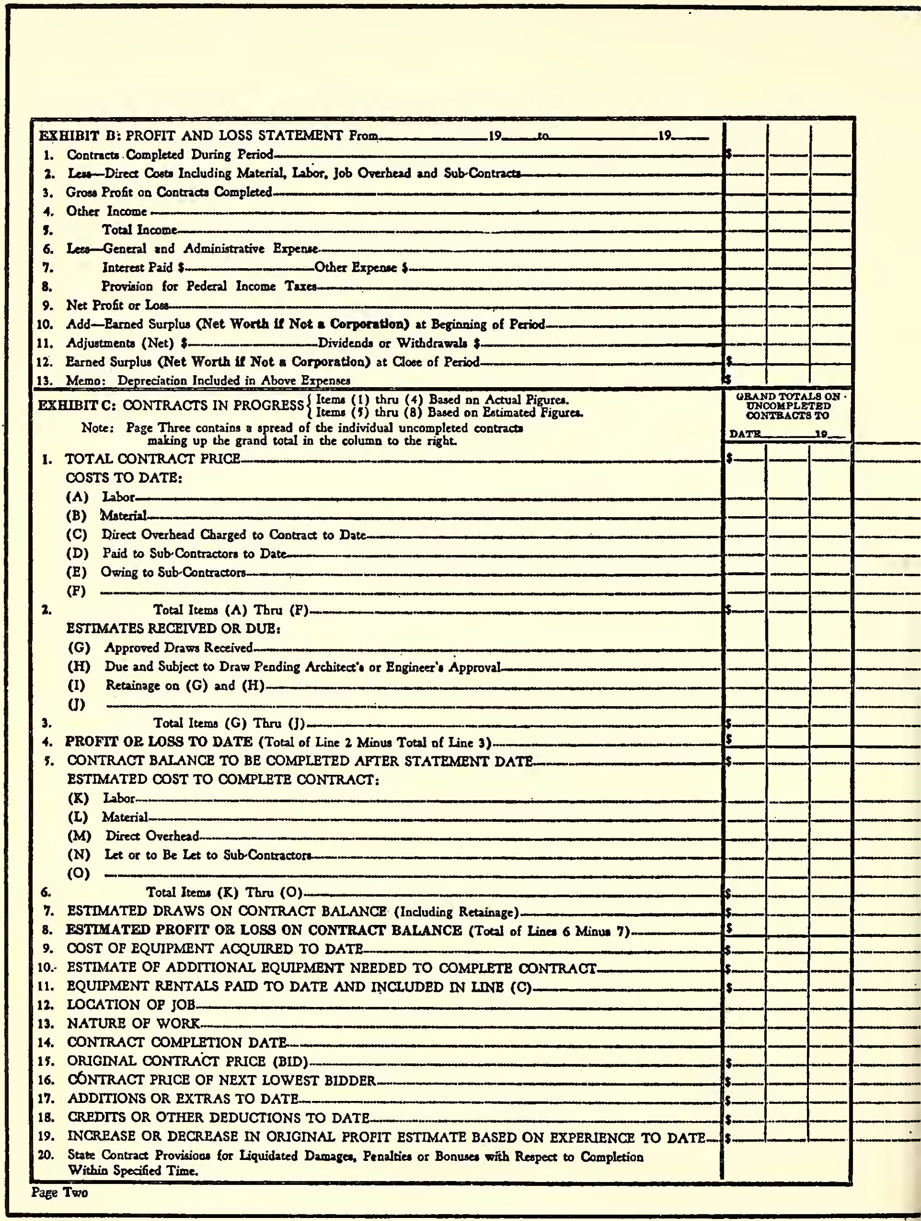


EXHIBIT B: PROFIT AND LOSS STATEMENT From ________ 19____ to ________ 19____

1. Contracts Completed During Period ________ $
2. Less—Direct Costs Including Material, Labor, Job Overhead and Sub-Contracts ________
3. Gross Profit on Contracts Completed ________
4. Other Income ________
5. Total Income ________
6. Less—General and Administrative Expense ________
7. Interest Paid $________ Other Expense $________
8. Provision for Federal Income Taxes ________
9. Net Profit or Loss ________
10. Add—Earned Surplus **(Net Worth if Not a Corporation)** at Beginning of Period ________
11. Adjustments (Net) $________ Dividends or Withdrawals $________
12. Earned Surplus **(Net Worth if Not a Corporation)** at Close of Period ________ $
13. Memo: Depreciation Included in Above Expenses $

EXHIBIT C: CONTRACTS IN PROGRESS { Items (1) thru (4) Based on Actual Figures. Items (5) thru (8) Based on Estimated Figures.

Note: Page Three contains a spread of the individual uncompleted contracts making up the grand total in the column to the right.

GRAND TOTALS ON UNCOMPLETED CONTRACTS TO DATE ________ 19____

1. TOTAL CONTRACT PRICE ________ $

COSTS TO DATE:

(A) Labor ________
(B) Material ________
(C) Direct Overhead Charged to Contract to Date ________
(D) Paid to Sub-Contractors to Date ________
(E) Owing to Sub-Contractors ________
(F) ________

2. Total Items (A) Thru (F) ________ $

ESTIMATES RECEIVED OR DUE:

(G) Approved Draws Received ________
(H) Due and Subject to Draw Pending Architect's or Engineer's Approval ________
(I) Retainage on (G) and (H) ________
(J) ________

3. Total Items (G) Thru (J) ________ $
4. **PROFIT OR LOSS TO DATE** (Total of Line 2 Minus Total of Line 3) ________ $
5. CONTRACT BALANCE TO BE COMPLETED AFTER STATEMENT DATE ________ $

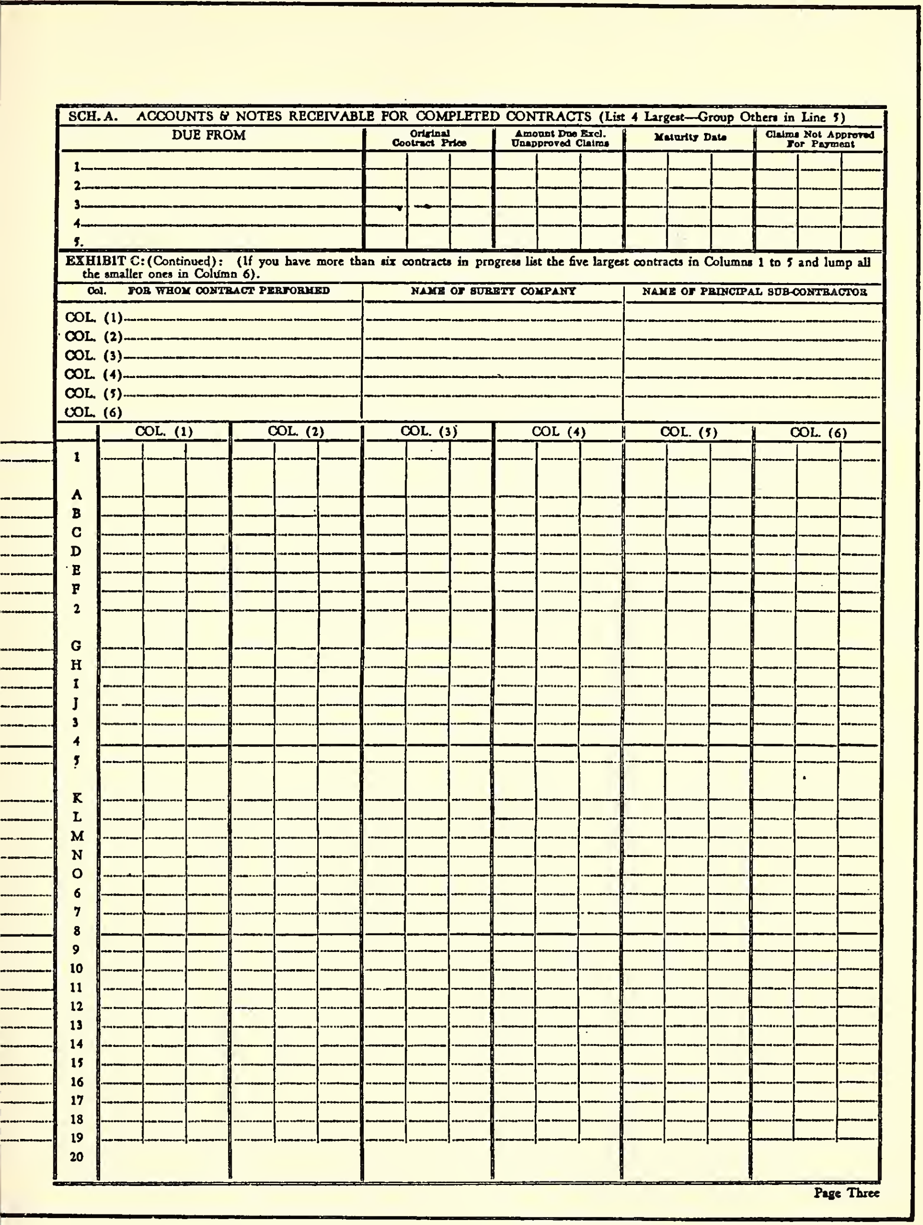
ESTIMATED COST TO COMPLETE CONTRACT:

(K) Labor ________
(L) Material ________
(M) Direct Overhead ________
(N) Let or to Be Let to Sub-Contractors ________
(O) ________

6. Total Items (K) Thru (O) ________ $
7. ESTIMATED DRAWS ON CONTRACT BALANCE (Including Retainage) ________ $
8. **ESTIMATED PROFIT OR LOSS ON CONTRACT BALANCE** (Total of Lines 6 Minus 7) ________ $
9. COST OF EQUIPMENT ACQUIRED TO DATE ________ $
10. ESTIMATE OF ADDITIONAL EQUIPMENT NEEDED TO COMPLETE CONTRACT ________ $
11. EQUIPMENT RENTALS PAID TO DATE AND INCLUDED IN LINE (C) ________ $
12. LOCATION OF JOB ________
13. NATURE OF WORK ________
14. CONTRACT COMPLETION DATE ________
15. ORIGINAL CONTRACT PRICE (BID) ________ $
16. CONTRACT PRICE OF NEXT LOWEST BIDDER ________ $
17. ADDITIONS OR EXTRAS TO DATE ________ $
18. CREDITS OR OTHER DEDUCTIONS TO DATE ________ $
19. INCREASE OR DECREASE IN ORIGINAL PROFIT ESTIMATE BASED ON EXPERIENCE TO DATE ________ $
20. State Contract Provisions for Liquidated Damages, Penalties or Bonuses with Respect to Completion Within Specified Time.

Page Two

Fig. 16.1 Contractor's financial statement (cont.)



SCH. A. ACCOUNTS & NOTES RECEIVABLE FOR COMPLETED CONTRACTS (List 4 Largest—Group Others in Line 5)				
DUE FROM	Original Contract Price	Amount Due Excl. Unapproved Claims	Maturity Date	Claims Not Approved For Payment
1				
2				
3				
4				
5.				

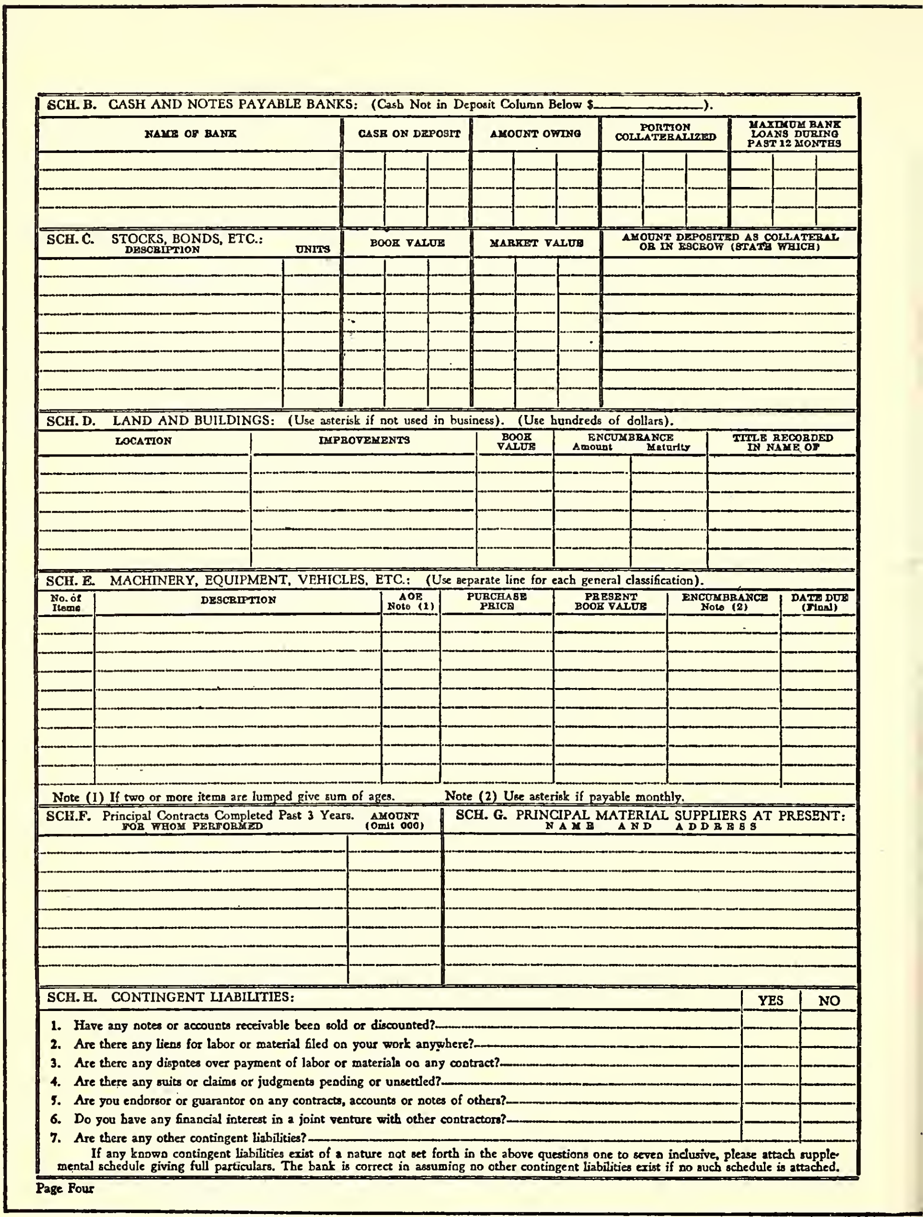
EXHIBIT C: (Continued): (If you have more than six contracts in progress list the five largest contracts in Columns 1 to 5 and lump all the smaller ones in Column 6).

Col. FOR WHOM CONTRACT PERFORMED	NAME OF SURETY COMPANY	NAME OF PRINCIPAL SUB-CONTRACTOR
COL. (1)		
COL. (2)		
COL. (3)		
COL. (4)		
COL. (5)		
COL. (6)		

	COL. (1)	COL. (2)	COL. (3)	COL (4)	COL. (5)	COL. (6)
1						
A						
B						
C						
D						
E						
F						
2						
G						
H						
I						
J						
3						
4						
5						
K						
L						
M						
N						
O						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

Page Three

Fig. 16.1 Contractor's financial statement (cont.)



SCH. B. CASH AND NOTES PAYABLE BANKS: (Cash Not in Deposit Column Below $__________).

NAME OF BANK	CASH ON DEPOSIT	AMOUNT OWING	PORTION COLLATERALIZED	MAXIMUM BANK LOANS DURING PAST 12 MONTHS

SCH. C. STOCKS, BONDS, ETC.:

DESCRIPTION	UNITS	BOOK VALUE	MARKET VALUE	AMOUNT DEPOSITED AS COLLATERAL OR IN ESCROW (STATE WHICH)

SCH. D. LAND AND BUILDINGS: (Use asterisk if not used in business). (Use hundreds of dollars).

LOCATION	IMPROVEMENTS	BOOK VALUE	ENCUMBRANCE Amount	ENCUMBRANCE Maturity	TITLE RECORDED IN NAME OF

SCH. E. MACHINERY, EQUIPMENT, VEHICLES, ETC.: (Use separate line for each general classification).

No. of Items	DESCRIPTION	AGE Note (1)	PURCHASE PRICE	PRESENT BOOK VALUE	ENCUMBRANCE Note (2)	DATE DUE (Final)

Note (1) If two or more items are lumped give sum of ages. Note (2) Use asterisk if payable monthly.

SCH.F. Principal Contracts Completed Past 3 Years. FOR WHOM PERFORMED	AMOUNT (Omit 000)	SCH. G. PRINCIPAL MATERIAL SUPPLIERS AT PRESENT: NAME AND ADDRESS

SCH. H. CONTINGENT LIABILITIES:	YES	NO
1. Have any notes or accounts receivable been sold or discounted?		
2. Are there any liens for labor or material filed on your work anywhere?		
3. Are there any disputes over payment of labor or materials on any contract?		
4. Are there any suits or claims or judgments pending or unsettled?		
5. Are you endorsor or guarantor on any contracts, accounts or notes of others?		
6. Do you have any financial interest in a joint venture with other contractors?		
7. Are there any other contingent liabilities?		

If any known contingent liabilities exist of a nature not set forth in the above questions one to seven inclusive, please attach supplemental schedule giving full particulars. The bank is correct in assuming no other contingent liabilities exist if no such schedule is attached.

Page Four

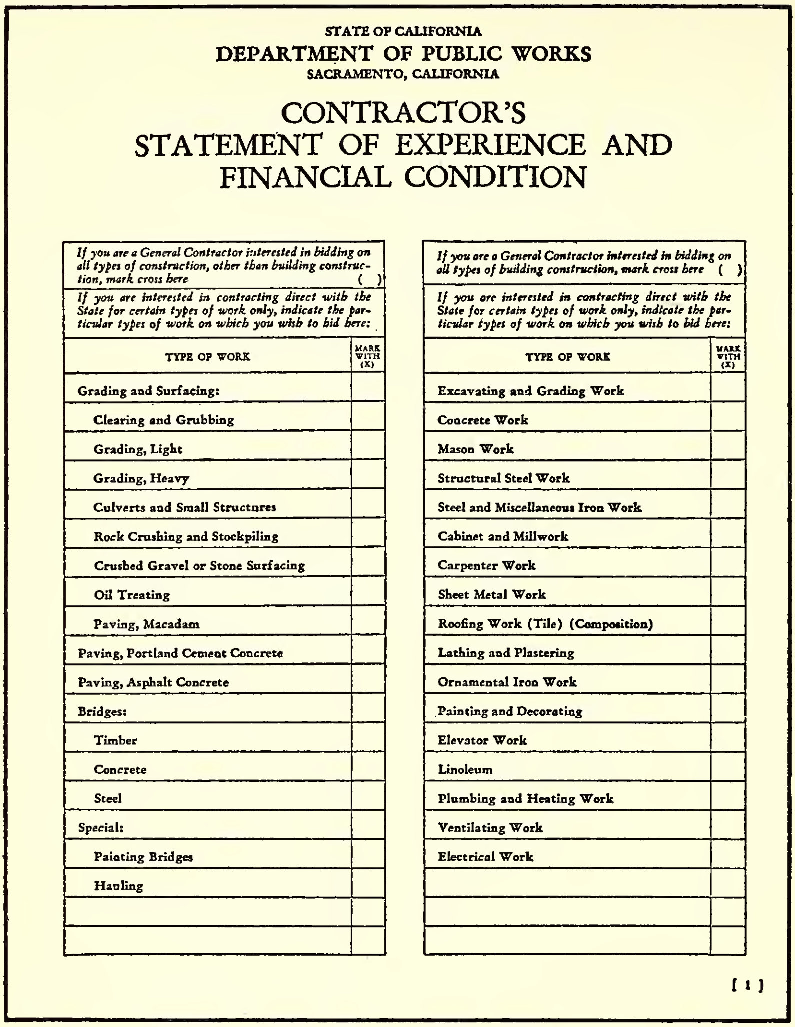
Fig. 16.1 Contractor's financial statement (cont.)

For any contractor who wants to receive maximum credit consideration, Fig. 16.1 is required reading. Among the items to be noted particularly are the following:

1. There is no attempt to break down the assets and liabilities into current and fixed categories in the traditional way.
2. The language in the captions is precise enough to let the person reading it know, at least in general, what the figures mean.
3. Progress billings not in schedule are deducted from incurred costs to arrive at Item 6 in the balance sheet. Presumably if there were an excess of progress billings over cost the difference would be shown either as "Other liabilities" or "Reserve for unearned income" (Item 27).
4. While the statement still uses the term "Earned surplus," instead of the more modern terminology "Retained earnings," the meaning is still sufficiently clear for the purpose of the banker or bondsmen.
5. Exhibit C calls for a separate "profit-or-loss" statement on each job and this, plus the absence of any accounting for fees on cost-plus-fixed-fee work, would appear to indicate a preference for the "profit-and-loss" approach over the "owner's equity" approach to cost-plus-fixed-fee accounting. Presumably, too, if there were a guaranteed maximum or "upset" price on a fee contract, that fact would be disclosed in Schedule H.
6. Items 6 to 20 on Exhibit C are peculiar to construction contractors and are of prime importance in any analysis of the position of each job.

Prospective clients

An insolvent or defaulting contractor causes nothing but trouble and expense for his client. First, there are delays in completing the work. Second, he may tend to try to save money by using inferior materials and workmanship. Third, unpaid mechanics and materialmen will doubtless file liens (or other similar statutory claims) against the real property, and if the contractor has been paid for the work represented by the lien, the client may be required to pay for it a second time. Even if the contractor has provided the partial protection of a performance and payment bond, the client's loss in terms of time, annoyance, and legal fees can be substantial. To reduce such risks, before they accept a bid on proposed construction work, clients often require that contractors submit financial statements (Fig. 16.2). The client's interest, in many respects, parallels that of the banker and the bondsman, but the emphasis is different. The banker and the bondsman want to know if the contractor has the money, the



STATE OF CALIFORNIA
DEPARTMENT OF PUBLIC WORKS
SACRAMENTO, CALIFORNIA

CONTRACTOR'S
STATEMENT OF EXPERIENCE AND
FINANCIAL CONDITION

If you are a General Contractor interested in bidding on all types of construction, other than building construction, mark cross here ( )

If you are interested in contracting direct with the State for certain types of work only, indicate the particular types of work on which you wish to bid here:

TYPE OF WORK	MARK WITH (X)
Grading and Surfacing:	
Clearing and Grubbing	
Grading, Light	
Grading, Heavy	
Culverts and Small Structures	
Rock Crushing and Stockpiling	
Crushed Gravel or Stone Surfacing	
Oil Treating	
Paving, Macadam	
Paving, Portland Cement Concrete	
Paving, Asphalt Concrete	
Bridges:	
Timber	
Concrete	
Steel	
Special:	
Painting Bridges	
Hauling	

If you are a General Contractor interested in bidding on all types of building construction, mark cross here ( )

If you are interested in contracting direct with the State for certain types of work only, indicate the particular types of work on which you wish to bid here:

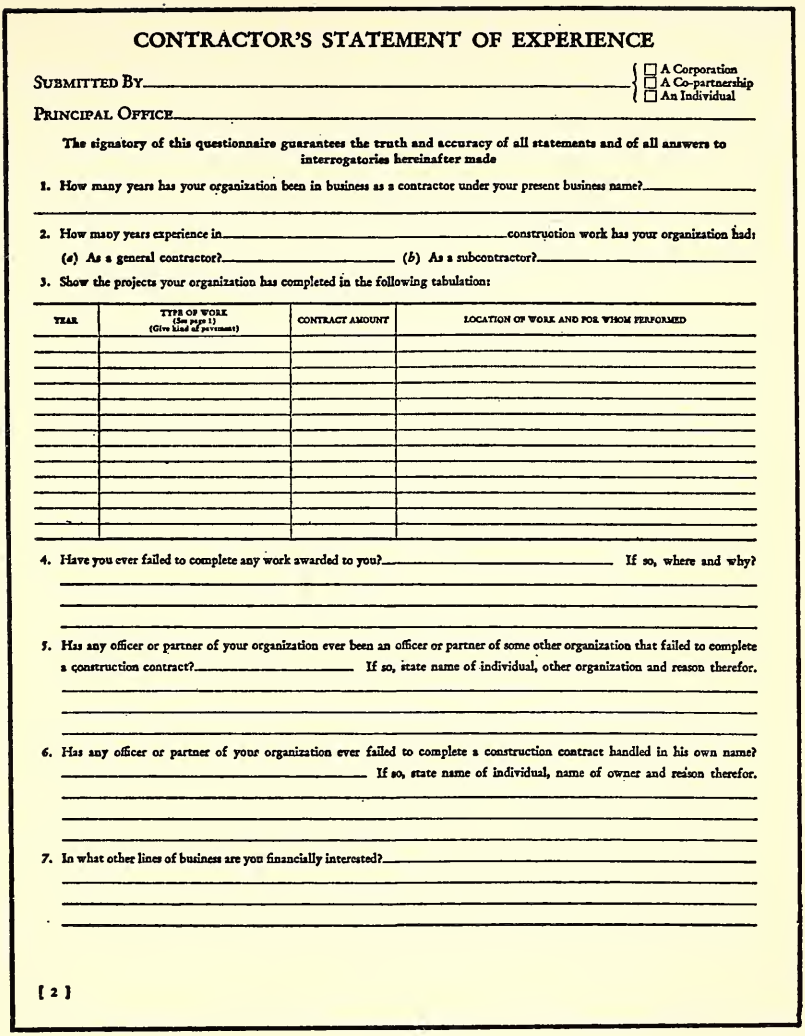
TYPE OF WORK	MARK WITH (X)
Excavating and Grading Work	
Concrete Work	
Mason Work	
Structural Steel Work	
Steel and Miscellaneous Iron Work	
Cabinet and Millwork	
Carpenter Work	
Sheet Metal Work	
Roofing Work (Tile) (Composition)	
Lathing and Plastering	
Ornamental Iron Work	
Painting and Decorating	
Elevator Work	
Linoleum	
Plumbing and Heating Work	
Ventilating Work	
Electrical Work	

[1]

Fig. 16.2 Contractor's statement of experience and financial condition

This statement is required by the state of California of contractors submitting bids on state construction work.

personnel and the equipment to complete the jobs he is working on. The prospective client wants to know whether the contractor will be able to finance, staff, and equip the client's job in addition to keeping up his other work. He also wants to see if the contractor has in progress one or more losing jobs that will drain off the progress payment money that the client pays to finance his own job.



CONTRACTOR'S STATEMENT OF EXPERIENCE

SUBMITTED BY ______________________ ☐ A Corporation ☐ A Co-partnership ☐ An Individual

PRINCIPAL OFFICE ______________________

The signatory of this questionnaire guarantees the truth and accuracy of all statements and of all answers to interrogatories hereinafter made

1. How many years has your organization been in business as a contractor under your present business name? ______________________

2. How many years experience in ______________________ construction work has your organization had:
   (a) As a general contractor? ______________ (b) As a subcontractor? ______________

3. Show the projects your organization has completed in the following tabulation:

YEAR	TYPE OF WORK (See page 1) (Give kind of pavement)	CONTRACT AMOUNT	LOCATION OF WORK AND FOR WHOM PERFORMED

4. Have you ever failed to complete any work awarded to you? ______________ If so, where and why?

5. Has any officer or partner of your organization ever been an officer or partner of some other organization that failed to complete a construction contract? ______________ If so, state name of individual, other organization and reason therefor.

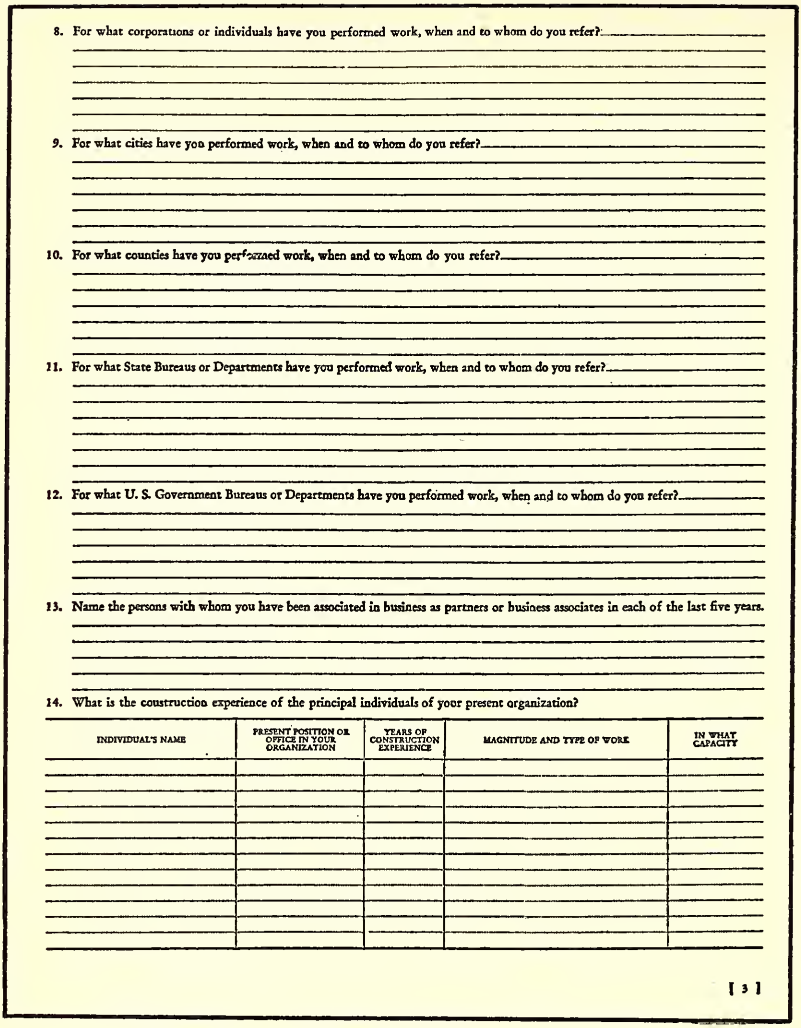
6. Has any officer or partner of your organization ever failed to complete a construction contract handled in his own name? ______________ If so, state name of individual, name of owner and reason therefor.

7. In what other lines of business are you financially interested? ______________

[2]

Fig. 16.2 Contractor's statement of financial condition (cont.)

For the contractor who is faced with the problem of getting new work while completing some losing jobs, the best way to overcome the client's objection is to offer to take the job on the basis of cost-plus-fixed-fee with the bid price as the guaranteed maximum (sometimes called an "upset" price). In that way the client keeps control of his money until he knows it was spent on his job. He can cover the risk that the contractor might go over the upset price by requiring bond, and he stands a chance to gain if the contractor does the job below



8. For what corporations or individuals have you performed work, when and to whom do you refer?

9. For what cities have you performed work, when and to whom do you refer?

10. For what counties have you performed work, when and to whom do you refer?

11. For what State Bureaus or Departments have you performed work, when and to whom do you refer?

12. For what U. S. Government Bureaus or Departments have you performed work, when and to whom do you refer?

13. Name the persons with whom you have been associated in business as partners or business associates in each of the last five years.

14. What is the construction experience of the principal individuals of your present organization?

INDIVIDUAL'S NAME	PRESENT POSITION OR OFFICE IN YOUR ORGANIZATION	YEARS OF CONSTRUCTION EXPERIENCE	MAGNITUDE AND TYPE OF WORK	IN WHAT CAPACITY

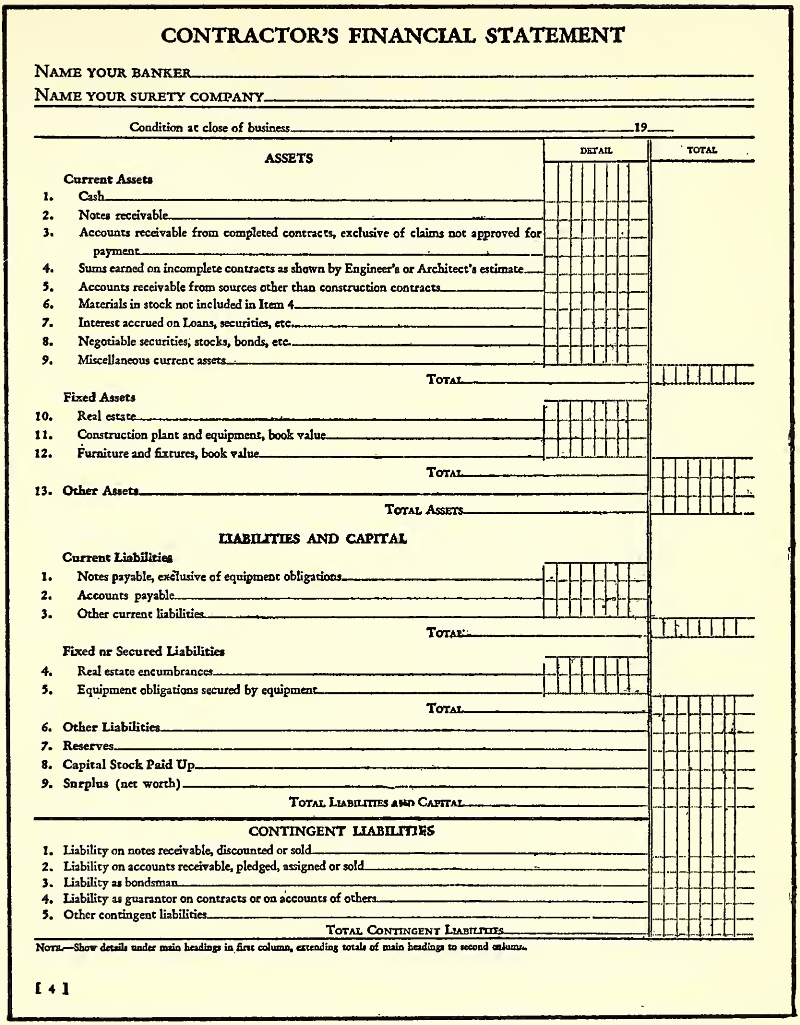
[3]

Fig. 16.2 Contractor's statement of financial condition (cont.)

his expected cost. Usually it is possible for the contractor to negotiate an agreement giving him a participation in savings if the work is done for an amount below the guaranteed maximum.

Suppliers and subcontractors

Suppliers and subcontractors are neither buying the contractor's services nor providing him directly with money or credit. Therefore



CONTRACTOR'S FINANCIAL STATEMENT

NAME YOUR BANKER

NAME YOUR SURETY COMPANY

Condition at close of business 19

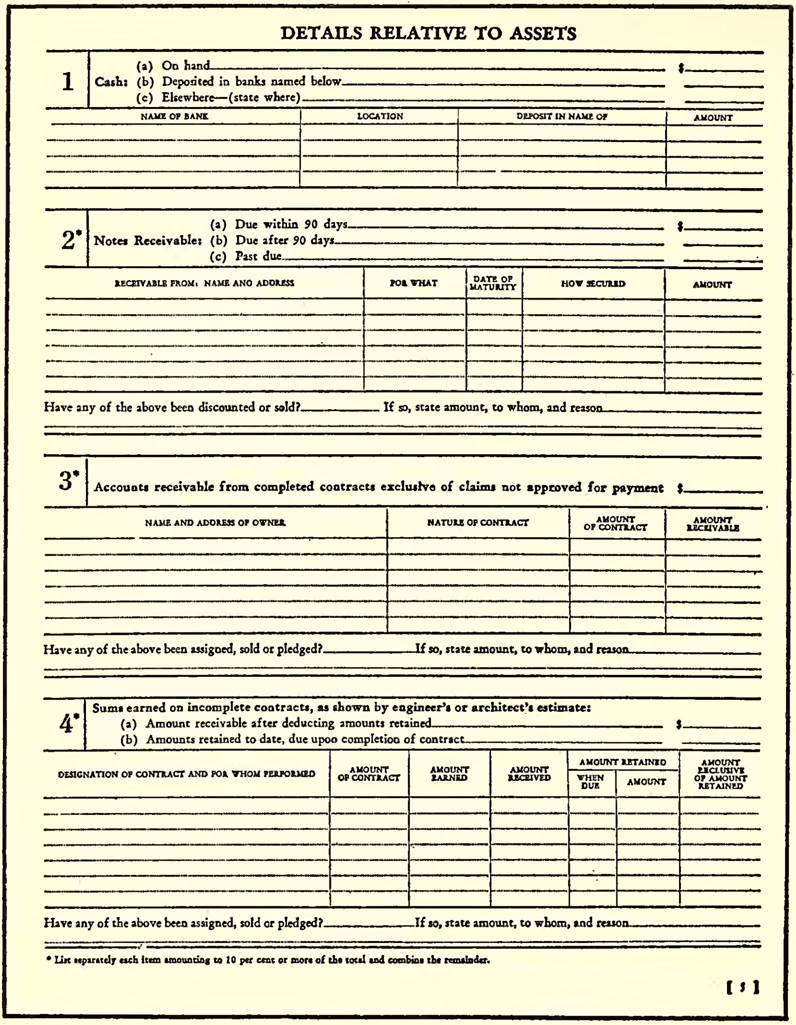
	DETAIL	TOTAL
ASSETS		
Current Assets		
1. Cash		
2. Notes receivable		
3. Accounts receivable from completed contracts, exclusive of claims not approved for payment		
4. Sums earned on incomplete contracts as shown by Engineer's or Architect's estimate		
5. Accounts receivable from sources other than construction contracts		
6. Materials in stock not included in Item 4		
7. Interest accrued on Loans, securities, etc.		
8. Negotiable securities, stocks, bonds, etc.		
9. Miscellaneous current assets		
TOTAL		
Fixed Assets		
10. Real estate		
11. Construction plant and equipment, book value		
12. Furniture and fixtures, book value		
TOTAL		
13. **Other Assets**		
TOTAL ASSETS		
LIABILITIES AND CAPITAL		
Current Liabilities		
1. Notes payable, exclusive of equipment obligations		
2. Accounts payable		
3. Other current liabilities		
TOTAL		
Fixed or Secured Liabilities		
4. Real estate encumbrances		
5. Equipment obligations secured by equipment		
TOTAL		
6. **Other Liabilities**		
7. **Reserves**		
8. **Capital Stock Paid Up**		
9. **Surplus (net worth)**		
TOTAL LIABILITIES AND CAPITAL		
CONTINGENT LIABILITIES		
1. Liability on notes receivable, discounted or sold		
2. Liability on accounts receivable, pledged, assigned or sold		
3. Liability as bondsman		
4. Liability as guarantor on contracts or on accounts of others		
5. Other contingent liabilities		
TOTAL CONTINGENT LIABILITIES		

NOTE.—Show details under main headings in first column, extending totals of main headings to second column.

[4]

Fig. 16.2 Contractor's statement of financial condition (cont.)

they are not in a position to ask for a great deal of financial information from the contractor. Usually they get their information from credit reporting agencies and from other suppliers and subcontractors. Building material dealers usually keep rather complete credit files and exchange information on their contractor customers. For the contractor in good financial condition, it is often good business to take a few selected suppliers and subcontractors into his confidence and show them his statements. The advantage can be twofold. First, the news



DETAILS RELATIVE TO ASSETS

1 Cash: (a) On hand ______ $______
(b) Deposited in banks named below ______ ______
(c) Elsewhere—(state where) ______ ______

NAME OF BANK	LOCATION	DEPOSIT IN NAME OF	AMOUNT

2* Notes Receivable: (a) Due within 90 days ______ $______
(b) Due after 90 days ______ ______
(c) Past due ______ ______

RECEIVABLE FROM: NAME AND ADDRESS	FOR WHAT	DATE OF MATURITY	HOW SECURED	AMOUNT

Have any of the above been discounted or sold? ______ If so, state amount, to whom, and reason ______

3* Accounts receivable from completed contracts exclusive of claims not approved for payment $______

NAME AND ADDRESS OF OWNER	NATURE OF CONTRACT	AMOUNT OF CONTRACT	AMOUNT RECEIVABLE

Have any of the above been assigned, sold or pledged? ______ If so, state amount, to whom, and reason ______

4* Sums earned on incomplete contracts, as shown by engineer's or architect's estimate:
(a) Amount receivable after deducting amounts retained ______ $______
(b) Amounts retained to date, due upon completion of contract ______ ______

DESIGNATION OF CONTRACT AND FOR WHOM PERFORMED	AMOUNT OF CONTRACT	AMOUNT EARNED	AMOUNT RECEIVED	AMOUNT RETAINED		AMOUNT EXCLUSIVE OF AMOUNT RETAINED
				WHEN DUE	AMOUNT	

Have any of the above been assigned, sold or pledged? ______ If so, state amount, to whom, and reason ______

* List separately each item amounting to 10 per cent or more of the total and combine the remainder.

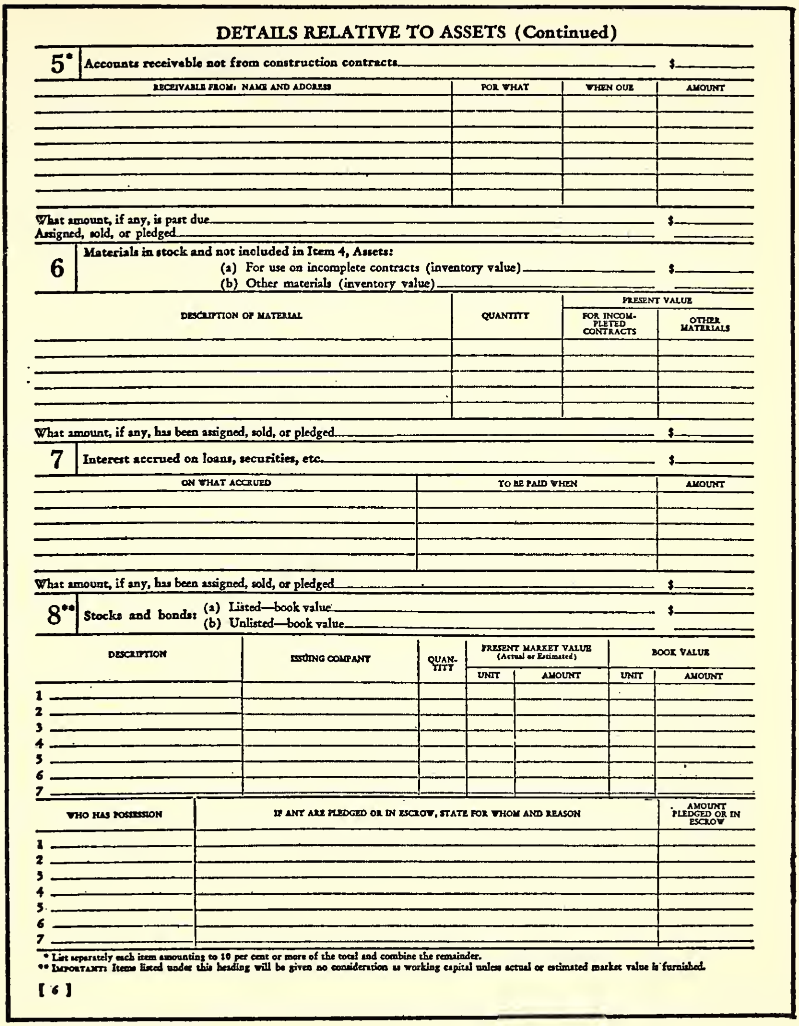
[3]

Fig. 16.2 Contractor's statement of financial condition (cont.)

travels in the trade. Second, the contractor may be able to get better prices from suppliers and subcontractors who feel their payment is secure.

Stockholders and partners

Stockholders, partners, and others who have a proprietary interest in a construction company use the company's financial statements to



DETAILS RELATIVE TO ASSETS (Continued)

5* Accounts receivable not from construction contracts ______ $______

RECEIVABLE FROM: NAME AND ADDRESS	FOR WHAT	WHEN DUE	AMOUNT

What amount, if any, is past due ______ $______

Assigned, sold, or pledged ______ ______

6 Materials in stock and not included in Item 4, Assets:

(a) For use on incomplete contracts (inventory value) ______ $______

(b) Other materials (inventory value) ______ ______

DESCRIPTION OF MATERIAL	QUANTITY	PRESENT VALUE	
		FOR INCOMPLETED CONTRACTS	OTHER MATERIALS

What amount, if any, has been assigned, sold, or pledged ______ $______

7 Interest accrued on loans, securities, etc. ______ $______

ON WHAT ACCRUED	TO BE PAID WHEN	AMOUNT

What amount, if any, has been assigned, sold, or pledged ______ $______

8** Stocks and bonds: (a) Listed—book value ______ $______

(b) Unlisted—book value ______ ______

	DESCRIPTION	ISSUING COMPANY	QUANTITY	PRESENT MARKET VALUE (Actual or Estimated)		BOOK VALUE	
				UNIT	AMOUNT	UNIT	AMOUNT
1							
2							
3							
4							
5							
6							
7							

	WHO HAS POSSESSION	IF ANY ARE PLEDGED OR IN ESCROW, STATE FOR WHOM AND REASON	AMOUNT PLEDGED OR IN ESCROW
1			
2			
3			
4			
5			
6			
7			

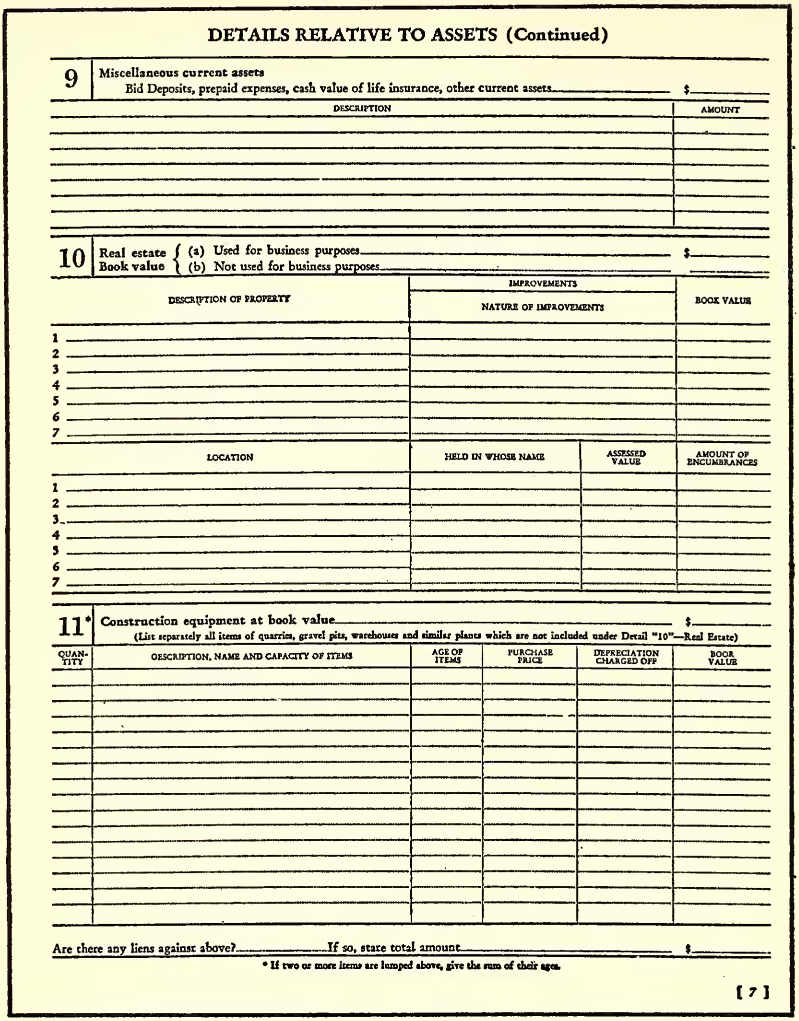
* List separately each item amounting to 10 per cent or more of the total and combine the remainder.

** IMPORTANT: Items listed under this heading will be given no consideration as working capital unless actual or estimated market value is furnished.

[6]

Fig. 16.2 Contractor's statement of financial condition (cont.)

find out four things. First, they want to know whether their investment is being soundly managed, and that question can be answered, in part, by review of the company's financial condition and the results of its operations. Unless they know something about the status of the jobs and the accounting methods used in reporting on their operation, their understanding is likely to be limited and their judgment may be wrong.



DETAILS RELATIVE TO ASSETS (Continued)

9 Miscellaneous current assets
Bid Deposits, prepaid expenses, cash value of life insurance, other current assets________ $________

DESCRIPTION	AMOUNT

10 Real estate Book value { (a) Used for business purposes________ $________
(b) Not used for business purposes________ ________

	DESCRIPTION OF PROPERTY	IMPROVEMENTS	BOOK VALUE
		NATURE OF IMPROVEMENTS	
1			
2			
3			
4			
5			
6			
7			

	LOCATION	HELD IN WHOSE NAME	ASSESSED VALUE	AMOUNT OF ENCUMBRANCES
1				
2				
3				
4				
5				
6				
7				

11* Construction equipment at book value________ $________
(List separately all items of quarries, gravel pits, warehouses and similar plants which are not included under Detail "10"—Real Estate)

QUANTITY	DESCRIPTION, NAME AND CAPACITY OF ITEMS	AGE OF ITEMS	PURCHASE PRICE	DEPRECIATION CHARGED OFF	BOOK VALUE

Are there any liens against above?________If so, state total amount________ $________

* If two or more items are lumped above, give the sum of their ages.

[7]

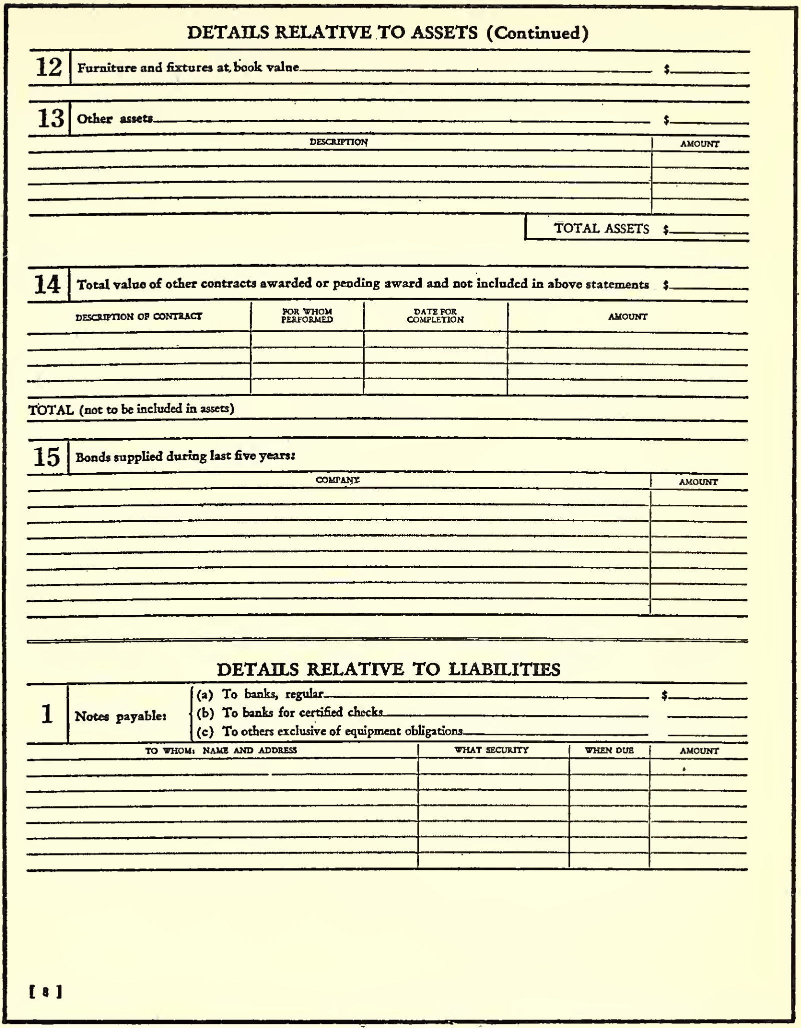
Fig. 16.2 Contractor's statement of financial condition (cont.)

Second, they want to know how much income they can expect to receive currently.

Third, they want to know the long-run prospects for income from their investments.

Fourth, they want to know if their investment is increasing in value.

Even the individual proprietor, who personally makes all the management decisions. will want to know the answers to these questions.



DETAILS RELATIVE TO ASSETS (Continued)

12 Furniture and fixtures at book value $

13 Other assets $

DESCRIPTION	AMOUNT

TOTAL ASSETS $

14 Total value of other contracts awarded or pending award and not included in above statements $

DESCRIPTION OF CONTRACT	FOR WHOM PERFORMED	DATE FOR COMPLETION	AMOUNT

TOTAL (not to be included in assets)

15 Bonds supplied during last five years:

COMPANY	AMOUNT

DETAILS RELATIVE TO LIABILITIES

1 Notes payable:
(a) To banks, regular $
(b) To banks for certified checks
(c) To others exclusive of equipment obligations

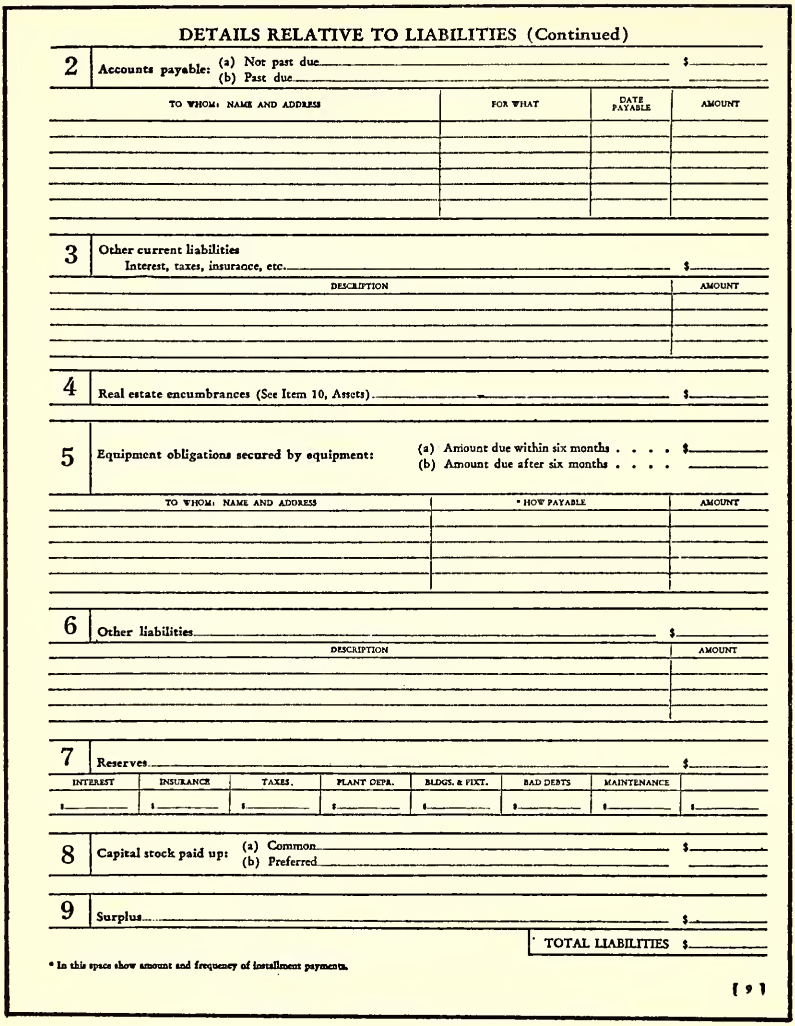
TO WHOM: NAME AND ADDRESS	WHAT SECURITY	WHEN DUE	AMOUNT

[8]

Fig. 16.2 Contractor's statement of financial condition (cont.)

For him it is a matter of checking his own thinking, rather than that of someone else. Still, the questions are the same and the facts needed to get the answers are the same. The only difference lies in the extent to which the individual proprietor or partner can rely on his own knowledge instead of that provided by the statements. Actually, the form and content of the statements should be the same regardless, because of the other uses to which the statement will be put.

Usually, a joint venture is itself a contractor, and the members of



DETAILS RELATIVE TO LIABILITIES (Continued)

2 Accounts payable: (a) Not past due ______ $______
(b) Past due ______ ______

TO WHOM: NAME AND ADDRESS	FOR WHAT	DATE PAYABLE	AMOUNT

3 Other current liabilities
Interest, taxes, insurance, etc. ______ $______

DESCRIPTION	AMOUNT

4 Real estate encumbrances (See Item 10, Assets) ______ $______

5 Equipment obligations secured by equipment: (a) Amount due within six months . . . . $______
(b) Amount due after six months . . . . ______

TO WHOM: NAME AND ADDRESS	* HOW PAYABLE	AMOUNT

6 Other liabilities ______ $______

DESCRIPTION	AMOUNT

7 Reserves ______ $______

INTEREST	INSURANCE	TAXES.	PLANT DEPR.	BLDGS. & FIXT.	BAD DEBTS	MAINTENANCE	
$______	$______	$______	$______	$______	$______	$______	$______

8 Capital stock paid up: (a) Common ______ $______
(b) Preferred ______ ______

9 Surplus ______ $______

TOTAL LIABILITIES $______

* In this space show amount and frequency of installment payments.

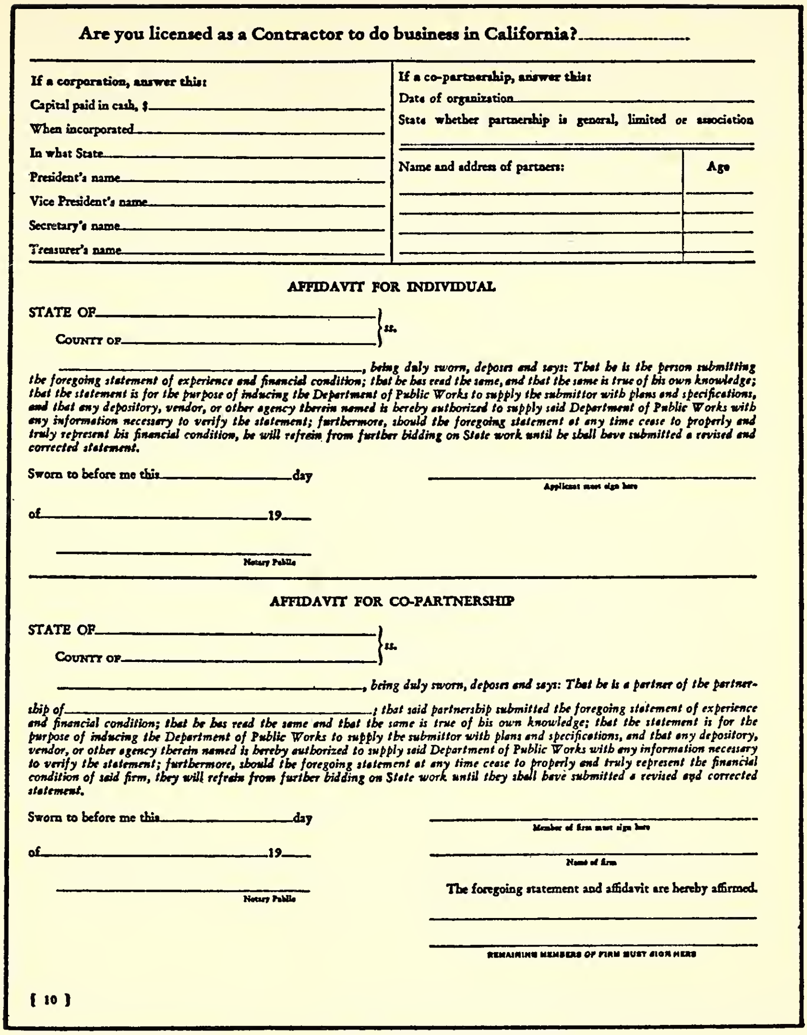
[9]

Fig. 16.2 Contractor's statement of financial condition (cont.)

the venture use the statements as if they were partners. The sponsor would, of course, also use the statements of the venture as one of its tools in managing the venture.

Statement requirements

Thus far the discussion has dealt principally with the form in which financial information is presented and the uses to which it is put.



Are you licensed as a Contractor to do business in California?______________

If a corporation, answer this:

Capital paid in cash, $______________

When incorporated______________

In what State______________

President's name______________

Vice President's name______________

Secretary's name______________

Treasurer's name______________

If a co-partnership, answer this:

Date of organization______________

State whether partnership is general, limited or association

____

Name and address of partners:	Age

AFFIDAVIT FOR INDIVIDUAL

STATE OF______________ }
COUNTY OF______________ } ss.

______________, *being duly sworn, deposes and says: That he is the person submitting the foregoing statement of experience and financial condition; that he has read the same, and that the same is true of his own knowledge; that the statement is for the purpose of inducing the Department of Public Works to supply the submittor with plans and specifications, and that any depository, vendor, or other agency therein named is hereby authorized to supply said Department of Public Works with any information necessary to verify the statement; furthermore, should the foregoing statement at any time cease to properly and truly represent his financial condition, he will refrain from further bidding on State work until he shall have submitted a revised and corrected statement.*

Sworn to before me this______________day

of______________19____

____
Notary Public

____
Applicant must sign here

AFFIDAVIT FOR CO-PARTNERSHIP

STATE OF______________ }
COUNTY OF______________ } ss.

______________, *being duly sworn, deposes and says: That he is a partner of the partnership of*______________*; that said partnership submitted the foregoing statement of experience and financial condition; that he has read the same and that the same is true of his own knowledge; that the statement is for the purpose of inducing the Department of Public Works to supply the submittor with plans and specifications, and that any depository, vendor, or other agency therein named is hereby authorized to supply said Department of Public Works with any information necessary to verify the statement; furthermore, should the foregoing statement at any time cease to properly and truly represent the financial condition of said firm, they will refrain from further bidding on State work until they shall have submitted a revised and corrected statement.*

Sworn to before me this______________day

of______________19____

____
Notary Public

____
Member of firm must sign here

____
Name of firm

The foregoing statement and affidavit are hereby affirmed.

____

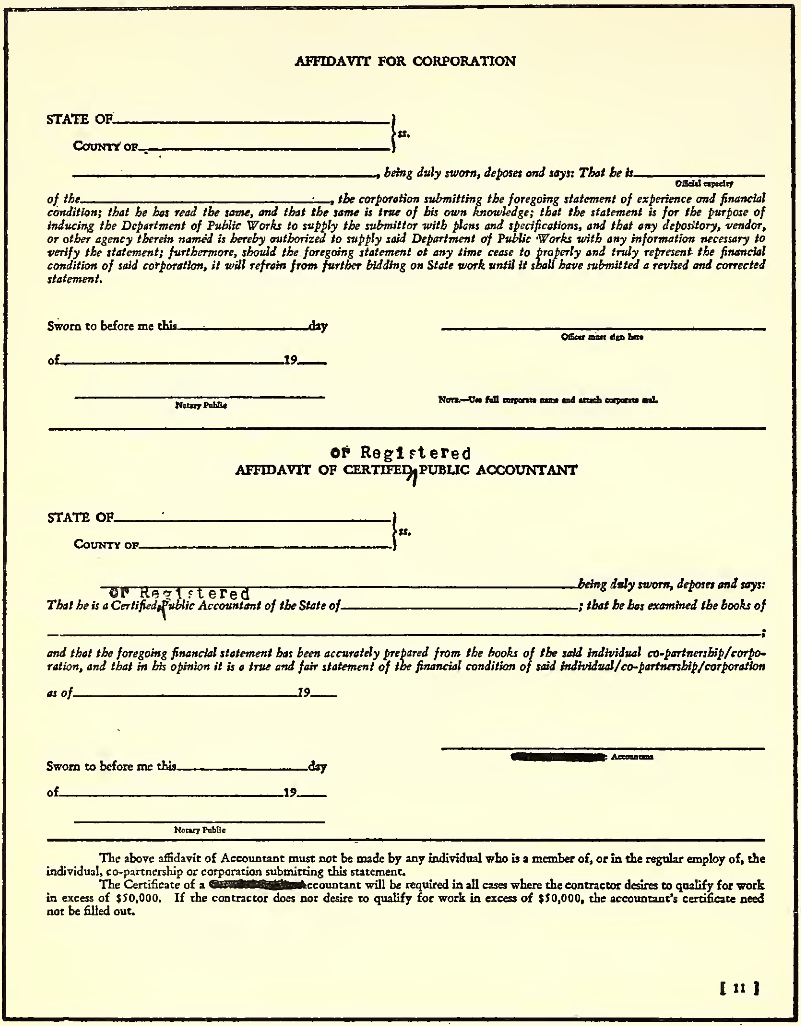
____
REMAINING MEMBERS OF FIRM MUST SIGN HERE

[10]

Fig. 16.2 Contractor's statement of financial condition (cont.)

Here the emphasis is on content. Running down the balance sheet, the items appear as follows:

Cash should consist principally of demand deposits in solvent banks. Office and job petty cash funds may be included if they have been replenished at the end of the accounting period. In a decentralized accounting system, cash may include the job bank accounts of wholly owned jobs, but it may not include the company's share in joint ven-



AFFIDAVIT FOR CORPORATION

STATE OF ______________ }
COUNTY OF ______________ } ss.

______________, *being duly sworn, deposes and says: That he is* ______________
Official capacity

of the ______________, *the corporation submitting the foregoing statement of experience and financial condition; that he has read the same, and that the same is true of his own knowledge; that the statement is for the purpose of inducing the Department of Public Works to supply the submittor with plans and specifications, and that any depository, vendor, or other agency therein named is hereby authorized to supply said Department of Public Works with any information necessary to verify the statement; furthermore, should the foregoing statement at any time cease to properly and truly represent the financial condition of said corporation, it will refrain from further bidding on State work until it shall have submitted a revised and corrected statement.*

Sworn to before me this ______________ day
of ______________ 19____

____
Officer must sign here

____
Notary Public

NOTE.—Use full corporate name and attach corporate seal.

or Registered
AFFIDAVIT OF CERTIFIED PUBLIC ACCOUNTANT

STATE OF ______________ }
COUNTY OF ______________ } ss.

______________ *being duly sworn, deposes and says:*
or Registered
That he is a Certified Public Accountant of the State of ______________; *that he has examined the books of*
______________;
and that the foregoing financial statement has been accurately prepared from the books of the said individual co-partnership/corporation, and that in his opinion it is a true and fair statement of the financial condition of said individual/co-partnership/corporation

as of ______________ *19*____

____
[redacted] Accountant

Sworn to before me this ______________ day
of ______________ 19____

____
Notary Public

The above affidavit of Accountant must not be made by any individual who is a member of, or in the regular employ of, the individual, co-partnership or corporation submitting this statement.

The Certificate of a [redacted] Accountant will be required in all cases where the contractor desires to qualify for work in excess of $50,000. If the contractor does not desire to qualify for work in excess of $50,000, the accountant's certificate need not be filled out.

[11]

Fig. 16.2 Contractor's statement of financial condition (cont.)

ture bank accounts. Cash should not include bid deposits or other cash deposits to guarantee performance, nor should it include any expense advances to employees or deposits subject to substantial limitations on withdrawal. Cash in foreign banks subject to currency restrictions may be treated as cash so long as it does not exceed the company's need for cash in the country whose currency is represented. In establishing the schedule showing cash in the bank, it is a good idea to relate the cash on deposit with any loans that may be outstanding with the same bank, the collateral pledged, the maximum credit extended by that bank, and the average balance during the past year. Every report should include a cash forecast, at least in the copies issued to management, the bank, and the bonding company.

Receivables should be broken down to show the following:

1. Progress billings approved and currently due.
2. Progress billings made but not yet approved.
3. Amounts earned and billable but not actually billed at the statement date.
4. Retained percentages on contracts in progress.
5. Retained percentages on completed jobs.
6. If advances to decentralized jobs and joint ventures are treated as receivables, they should be set apart in a separate schedule and should appear on the face of the balance sheet under a separate caption. Whether an equity in such a job arising from job profits should be treated as a receivable is open to question, but when such treatment is used that fact should be disclosed.
7. Cost of jobs in process, when these items are treated as receivables. When this treatment is used, only the excess of cost over progress billings on any particular job should be shown. If there is an excess of progress billings over cost, there is some merit to treating the excess as a deferred credit to income like any other amount that is billed before it is earned, but the more conservative treatment is to treat such excess as current liabilities.
8. Amounts due from miscellaneous sales and services and from insurance claims.
9. Amounts due from officers and employees.

Supporting schedules should show these items in detail, and when they arise from or are related to any particular job, they should be identified with that job in the schedules.

Inventories, technically speaking, are limited to unappropriated stocks of materials, supplies, and spare parts. Sometimes small tools are classified with supplies, and sometimes they are shown separately. Either way, they should be separately identified, either on the face of the balance sheet, or in the schedules. Purchased inventory should be valued at cost or market value, whichever is lower. There is no fixed rule for used materials, supplies, and small tools brought in from jobs. One standard treatment is to value such used items at 50 per cent of cost. Another method is to value them at salvage value when they are brought in from a job, and to let the warehouse sell them to the next job at market value. The margin covers the cost of storage, reconditioning, and operation of the warehouse.

If the cost of jobs in process is treated as an inventory item, it should be charged with production overhead. It is technically correct, also, to allocate a portion of the general office overhead to the jobs, but unless the company is computing income by the accrual method, or by the percentage-of-completion variation, the practice is unconservative and should be avoided, particularly so if the net cost of jobs in process is treated as an inventory item. If job costs on any particular job exceed progress billings on that job, only the net difference should be treated as an inventory item. If progress billings exceed cost the excess should be treated as a current liability because, at least in theory, it represents an advance from the owner which must be repaid by further expenditures on the cost.

Investments, in the sense of stocks, bonds, or mortgages used as a temporary reservoir for surplus funds, are not often found in the balance sheet of an active construction company. On the contrary, an active contractor is usually short of cash. However, it is quite common to see the contractor take all or part of his payment in special assessment bonds or similar obligations. It is also common to see funds advanced to joint ventures, or even to large, wholly owned jobs with decentralized accounting, referred to as investments.

The three types of items are totally unrelated, and each should be treated separately, and shown separately, on the balance sheet. The true investments should be stated at the lower of cost or market value. The securities taken as a part of the contract price of work done should be taken into account at market value on the date received. The advances to large jobs should be stated at actual cash advanced less any amounts refunded during the life of the job. Generally speaking, it is not good practice to carry the portion of the contractor's equity which represents profit from such jobs in an investment account.

All items designated as investments should be classified and shown in detail on the schedules to the balance sheet with enough description to clarify their source and nature. If they have been pledged as security for any liability, that fact should be shown.

Fixed assets, in addition to the customary segregations of land, buildings, machinery and equipment, trucks and trailers, automobiles, and so on, should also be classified according to whether or not they are used in the business. Thus, land held for a future equipment yard and warehouse would be segregated from land taken in as part payment on a job and held for sale; and both would be segregated from the land on which the present yard and warehouses are situated.

Equipment and vehicles are the life blood of some contracting firms. Others own little or none, and there should be some note on the statements to show why. For firms that do own equipment, a schedule showing all of it is best, if not too long. If a detailed list is impractical, then a list by types (dump trucks, power shovels, compactors, and so on) should be made. The schedule should show cost, depreciation (or amortization), book value, amount owed, and net equity. If accelerated depreciation or amortization has been claimed, that fact should be noted in the equipment schedules.

Notes and accounts payable should be shown in detail in a schedule whenever practical. The schedule of notes payable should show in detail the payee, due date, interest rate, security given, and amount. If some notes are given to finance bid deposits, that fact should be indicated, and those notes segregated from regular loans. Notes given for the purchase of equipment and secured by equipment should be separated in the schedule, and the encumbered equipment should be described as accurately as possible. In the equipment schedule, of course, the encumbrance will be shown against the encumbered equipment. Notes to officers, employees, friends, and relatives should be scheduled separately, and if any have been subordinated to other claims, that fact should be noted, and the claims to which they have been subordinated should be indicated.

For internal management purposes, a list of trade accounts payable should accompany the report. In the reports issued to the bank and bonding company, the ten or fifteen largest accounts may be shown in detail and the others lumped together. The "Trade accounts payable" schedule should show as a footnote any disputed payable or other item which might affect the contractor's credit, such as a very large advance purchase made to secure scarce materials, or at bargain prices.

Taxes payable include not only the routine payroll tax, property tax, and sales and use tax accruals, but may also include federal and state income taxes. The income taxes should never be lumped with the other taxes and, in fact, should show as a separate item on the face of the balance sheet. There are some technical objections to showing on the balance sheet of a proprietorship or a partnership the income tax liabilities of the individual owner or owners. However, if the business is going to be called upon to pay the money, the technical objections must give way to the practical considerations, and the technical exception may be taken in a footnote. A supporting schedule may show the estimated tax, the prepayments, and the net amount of cash the business is going to be called upon to supply.

If, for any reason, taxes withheld from employees' wages become delinquent, it is essential that the delinquency be shown and the reason noted. Withheld taxes are trust funds and willful failure to pay them is a very serious offense. In fact, the individual responsible for the failure to pay may be held personally responsible for the tax plus heavy penalties.

Contingent liabilities may include a number of items. Following are some of the better known examples:

1. Notes or accounts receivable discounted or sold "with recourse."
2. Liens filed or threatened on any job.
3. Disputes over amounts due to laborers, materialmen, or subcontractors (including labor disputes involving retroactive pay or union health and welfare fund contributions).
4. Suits, claims, or judgments pending or unsettled.
5. Endorsements or guarantees on the notes or contracts of others.
6. Possible liability for a share of joint venture losses.
7. Possible liabilities for refund of progress payments made should jobs not be finished.
8. Possible loss on contracts with a fixed fee and a guaranteed maximum contract price.
9. Possible penalties for alleged violations of wage and hour laws and other similar statutory or contractual penalties.
10. Possible liquidated damages for failure to complete jobs on time.
11. Possible additional tax assessments.

The Accounting method or methods used in the preparation of the statements needs to be described. Sometimes it can be shown in the account captions, for example, "Job revenue (on the basis of contracts completed and accepted during the period)" or "Cost of contract work completed (based on percentage of completion and including allowance for job overhead)."

Sometimes the accounting method cannot be explained briefly enough to be covered by the caption, and a note to the financial statements would be necessary. A typical footnote might be:

"Revenue and costs on lump sum and unit price contracts are computed on a modified form of the completed contract method under which contracts which are 90 per cent or more complete at the end of the period are closed. Revenue from cost-plus-fixed-fee jobs is taken into account on the basis of the ordinary rules of accrual accounting. Income from joint ventures is taken into account as shown on the joint venture books at the close of the period."

Job revenue and job costs should be supported by a schedule showing, in summary, an operating statement on each job together with the following information about each job:

1. Original contract price (estimated in terms of expected units on unit price jobs)
2. Number and amount of additive change orders
3. Number and amount of deductive change orders
4. Total contract
5. Balance of contract to be completed after the statement date
6. Estimated cost to complete broken down into the estimated cost of:
    a. Labor
    b. Materials
    c. Subcontracts
    d. Equipment rentals
    e. Job overhead
    f. Total
7. Estimated cash, including retention, still to be received
8. Estimated profit (or loss) still to be earned
9. Cost of job-owned equipment to date
10. Equipment rentals paid to date
11. Location of job
12. Name and contract number (if any) by which the job is known
13. Date presently scheduled for completion
14. Date presently estimated for completion
15. Liquidated damages, and completion bonuses (if any)
16. Kind of work
17. Original bid
18. Next lowest bid
19. Amount of bond (if any)
20. Bonding company (if any).

If a blanket job order number is assigned to a large number of small jobs, the total should be reported as a single job.

When subcontractors are doing an important part of the work, it is not uncommon to see prepared for the bank a so-called "exposure schedule" which deducts, from the remaining work to be done on each job, the amount that is to be done by subcontractors. The function of this schedule is to show the banker what part of the risk and the financial load is being carried by subcontractors.

Sample Statements

Schedule 16.1 presents a series of financial statements in a form that might be used for the management of a small building contractor.

SCHEDULE 16.1/FINANCIAL STATEMENTS FOR SMALL BUILDING CONTRACTOR

Ecks and Wye Construction Co.
Balance Sheet—June 30, 19—
Assets

Current assets:	*June 30, 19—*	*May 31, 19—*	*Increase or decrease*
Cash (Schedule 1)	$ 3,780	$ 3,322	$ 458
Receivables (Schedule 2)	21,570	20,258	1,312
Cost of jobs in progress (Schedule 3)	1,957	3,005	(1,048)
Inventories of supplies and tools	875	930	(55)
Prepaid expenses (Schedule 4)	1,558	1,340	218
Total current assets	$29,740	$28,855	$ 885
Fixed assets (Net) (Schedule 5)	$27,750	$23,480	$4,270
Other assets (Schedule 6)	$ 4,220	$ 4,560	$ (340)
Total assets	$61,710	$56,895	$4,815

Liabilities

Current liabilities:			
Note payable to bank (Schedule 7)	$ 4,000	$ 4,000	$ —
Accounts payable—trade (Schedule 8)	7,880	7,100	$ 780
Due to subcontractors—current (Schedule 9)	6,330	5,990	340
Due to subcontractors—retention (Schedule 9)	1,275	985	290
Equipment contracts—current (Schedule 10)	1,550	1,400	150
Accrued liabilities (Schedule 11)	2,440	2,120	320
Miscellaneous current liabilities	150	100	50
Total current liabilities	$23,625	$21,695	$1,930
Equipment contracts—long-term (Schedule 10)	$ 9,650	$ 9,350	$ 300
Partners' equities (Schedule 12)	$28,435	$25,850	$2,585
Total liabilities	$61,710	$56,895	$4,815

Ecks and Wye Construction Co.
Schedules to the Balance Sheets
June 30, 19—

Schedule 1—Cash

Petty cash	$ 150
First National Bank—General account	3,130
First National Bank—Payroll account	500
Total cash	$3,780

SCHEDULE 16.1/STATEMENTS FOR SMALL BUILDING CONTRACTOR (Cont.)

Schedule 2—Receivables

Progress billings on jobs		*Current*	*Retention*	*Total*
7	S & Y Corp.—relocate railway spur	$ 2,375	$1,250	$ 3,625
8	County of Butte—hospital repairs	2,940	1,770	4,710
9	Riskeway Stores—store building	2,190	530	2,720
10	Plastimold Corp.—warehouse	1,885	370	2,255
12	E. Z. Doe—residence	2,950	295	3,245
	TOTAL PROGRESS BILLINGS	$12,340	$4,215	$16,555
Advance to Ecks-Wye-Zee joint venture				$ 3,000
Bid deposit				1,000
Construction Equipment Corp. (for used International truck)				1,015
	TOTAL			$21,570

Schedule 3—Cost of jobs in progress not yet billed

Items	*Job 11*	*Job 13*	*Total*
Labor	$ 566	$137	$ 703
Materials	234	403	637
Equipment rental	—	150	150
Subcontracts	230	—	230
Overhead allocated	142	95	237
	$1,172	$785	$1,957

Schedule 4—Prepaid expenses

Prepaid insurance	$1,050
Employees' expense advances	350
Stationery and office supplies	158
	$1,558

Schedule 5—Fixed assets

	Cost	*Depreciation*	*Net*
Heavy equipment	$34,500*	$19,440*	$15,060
Automobiles and trucks	18,300*	9,215*	9,085
Planing mill equipment	8,675	6,880	1,795
Power tools	4,905	3,095	1,810
	$66,380	$38,630	$27,750

* Covered by chattel mortgage securing long-term equipment loan. See Schedule 10. These items were bought new since Jan. 1, 1954, and have been depreciated by the declining balance method.

SCHEDULE 16.1/STATEMENTS FOR SMALL BUILDING CONTRACTOR (Cont.)

Schedule 6—Other assets	
Returnable containers	$ 375
Airline credit card deposit	500
Utility deposits	180
Cash bond—California sales tax	1,500
Due from Deposit and Fidelity Corp. (disputed claim on subcontractor bond)	1,665
	$4,220

Schedule 7—Note payable to bank	
Six per cent, 120-day, unsecured note payable to First National Bank August 5, 19—.	$4,000

This is a renewal of the unpaid portion of $8,000 borrowed to finance the starting of Job 8.

Schedule 8—Accounts payable	
Earl E. Bird Building Materials Co.	$2,017
Transport Ready-Mix Concrete	993
H. Beam Steel Co.	878
Engineering Supply Co.	366
Old Pine Lumber Co.	944
Home Town Motors	232
Ketchum & Skinner—insurance claim	889
Contractor's Equipment Corp.	744
Other accounts payable under $100	817
	$7,880

Schedule 9—Due to subcontractors

Job No.	*Sucontractor's name*	*Currently due*	*Retained percentage*
7	Railroad Specialty Co.	$ 975	$ 177
8	B & C Plumbing Co.	884	207
8	Super Q Electric Co.	451	96
9	B & C Plumbing Co.	775	195
9	Super Q Electric Co.	990	99
10	B & C Plumbing Co.	558	104
11	Howard Digges Construction	207	23
12	Day Electric Co.	683	158*
12	Knight Plumbing Co.	446	123*
12	Formmasters Corp.	361	93*
		$6,330	$1,275

* Retained percentage: 25 per cent, in accordance with contract requirements.

SCHEDULE 16.1/STATEMENTS FOR SMALL BUILDING CONTRACTOR (Cont.)

Schedule 10—Equipment contracts

Items	*Current portion*	*Long-term*
6 per cent notes payable to Mark Ecks, father of one of the partners, secured by a chattel mortgage on equipment costing $52,800. Payments are on the basis of rent, but the principal is payable in any event in 5 years. Current portion is estimated as the amount which will become due in the current year.	$1,550	$9,650

Schedule 11—Accrued liabilities

Interest accrued on bank loan	$ 40
Interest accrued on equipment loans	290
Withheld from employees for taxes	1,275
Employer payroll taxes	575
Workmen's compensation and liability insurance	230
Sales and use taxes	30
	$2,440

Schedule 12—Partner's equities

	I.M. Ecks	*N.O. Wye*	*Together*
Initial investment	$ 7,500.00	$ 7,500.00	$15,000.00
Retained earnings—prior years	4,500.00	4,500.00	9,000.00
Earnings—current year to date	8,217.50	8,217.50	16,435.00
Withdrawals—current year to date	(6,000.00)	(6,000.00)	(12,000.00)
	$14,217.50	$14,217.50	$28,435.00

NOTE: Partners' personal income taxes were paid on estimated earnings to date on June 15, 19.....

Ecks and Wye Construction Co.
Summary of Income and Expense
For the Six Months Ended June 30, 19—

Income:	
Gross contract revenue	$150,000
Less: Unearned contract revenue	3,850
Net contract revenue (Schedule A)	$146,150
Cost of contract work (Schedule A)	124,213
Income from contracts	$ 21,937
Other income (equipment rentals)	5,978
TOTAL INCOME	$ 27,915

SCHEDULE 16.1/STATEMENTS FOR SMALL BUILDING CONTRACTOR (Cont.)

Ecks and Wye Construction Co.
Schedule A to the Summary of Income
and Expense for the Six Months ended June 30, 19—

	3	4	5	6	7	8	9	10	12	TOTAL
Gross contract revenue	$28,500	$19,600	$31,000	$28,750	$12,500	$17,700	$5,300	$3,700	$2,950	$150,000
Less: Unearned revenue	—	—	—	—	—	700	1,000	1,200	950	3,850
Net contract revenue	28,500	19,600	31,000	28,750	12,500	17,000	4,300	2,500	2,000	146,150
Costs:										
Labor	$ 6,915	$ 4,750	$ 7,550	$ 6,600	$ 4,850	$ 3,400	$ 160	$ —	$ —	$ 34,225
Materials	4,359	3,110	4,820	5,020	2,205	2,105	—	—	—	21,619
Equipment	3,625	2,840	3,918	4,923	1,665	1,690	—	—	—	18,661
Subcontracts	5,120	2,557	4,913	4,358	1,770	3,030	2,940	1,040	1,492	27,220
Other direct costs (including bonds)	1,611	1,233	2,380	999	730	2,438	100	816	—	10,307
Overhead allocated to jobs	2,120	1,750	2,818	2,190	1,463	1,267	320	104	149	12,181
Total costs	$23,750	$16,240	$26,399	$24,090	$12,683	$13,930	$3,520	$1,960	$1,641	$124,213
INCOME FROM CONTRACTS	$ 4,750	$ 3,360	$ 4,601	$ 4,660	$ (183)	$ 3,070	$ 780	540	$ 359	$ 21,937

SCHEDULE 16.1/STATEMENTS FOR SMALL BUILDING CONTRACTOR (Cont.)

Expenses (deduct):	
Bidding expense (Schedule B)	10,922
General and administrative expense (Schedule B)	12,739
Overhead applied to jobs (Schedule B)	(12,181)
TOTAL EXPENSE	$ 11,480
NET INCOME	$ 16,435

Ecks and Wye Construction Co.
Schedule B to the Summary of Income and Expense
For the Six Months Ended June 30, 19—

Items	*Allocation of overhead* *Bidding*	*General*	*Total*
Salaries (Note 1)	$ 8,400	$ 8,700	$17,100
Rent	240	300	540
Repairs and maintenance	60	48	108
Automobile expense	670	540	1,210
Depreciation—nonoperating	300	360	660
Stationery and supplies	150	120	270
Telephone and telegraph	122	90	212
Travel	900	618	1,518
Utilities	60	36	96
Insurance—other than payroll		225	225
Taxes		877	877
Interest		390	390
Bad debts		40	40
Legal and auditing		300	300
Miscellaneous bidding	20		20
Miscellaneous general		95	95
Total	$10,922	$12,739	$23,661
Transferred to jobs on basis of direct labor hours	(7,302)	(4,879)	(12,181)
	$ 3,620	$ 7,860	$11,480

NOTE 1: The two partners each draw $1,000 per month, which is charged to their drawing accounts and not to overhead.

If job accounting is decentralized the statements are somewhat like those of a separate construction company engaged on only one job. The most important difference lies in the equity section of the balance sheet, where a condensed operating statement is often given instead of being set forth on a separate statement. Another difference is in the statement of job revenues and costs, which usually appears in the form of a cost statement by work items. Still another difference is in the form of the balance sheet, which is more like a trial balance than a formal financial statement. Also common is the practice of deferring and amortizing general expense. Schedule 16.2 illustrates these points.

SCHEDULE 16.2/FINANCIAL STATEMENT FOR A DECENTRALIZED JOB

Ecks and Wye Construction Co.
General Ledger—Contract 51
Mountain City, Calif.
At close of business for month of February, 19—

Assets

Cash:			
Petty cash		$ 50.00	
First National Bank—General account		2,150.00	
Security Bank—Payroll account		1,000.00	
			$ 3,200.00
Accounts receivable:			
Approved progress billings		$28,500.00	
Retained percentages		15,000.00	
Progress billings not yet approved		14,500.00	
Employees' accounts		75.00	
Miscellaneous receivables		2,100.00	
Fees receivable			
Reimbursable costs			
Reimbursable costs unbilled			
Reimbursable costs accrued			
			60,175.00
Materials and supplies:			
Purchases for warehouse		$21,500.00	
Credits for warehouse issues	$ 8,100.00		
Credits for warehouse sales	900.00	9,000.00	
			12,500.00
Mess hall			
Food		$ 1,150.00	
Commissary merchandise		200.00	
Machine shop operation	$ 2,875.00		
Credits for machine shop work	2,350.00	525.00	
			1,875.00

SCHEDULE 16.2/STATEMENTS FOR A DECENTRALIZED JOB (Cont.)

Deferred charges and other assets:			
Plant and moving in	$37,750.00		
Credits for amortization	18,900.00	$18,850.00	
General expense	14,200.00		
Credits for amortization	12,550.00	1,650.00	
Refundable deposits		180.00	
Debits (unallocated)			
Equipment rental suspense			
Returnable containers		20.00	
			20,700.00
Equipment (job owned):			
Major equipment—cost		$ 4,800.00	
Depreciated cost transferred	$ 500.00		
Depreciation charged to job	2,400.00	2,900.00	
			1,900.00
Minor equipment—salvage value			
Cost to be depreciated			
Depreciation charged to job			
TOTAL ASSETS			$100,350.00

Ecks and Wye Construction Co.
General Ledger—Contract 51
Mountain City, Calif.
At close of business for month of February, 19—
Liabilities

Accounts payable:		
Accounts payable—general	$12,750.00	
Contract advances received		
		$12,750.00
Due subcontractors	2,600.00	
Due subcontractors—retained percentages	950.00	
		3,550.00
Group hospitalization insurance		100.00
Accrued payroll		1,250.00
Accrued S.S. and withholding taxes:		
Federal withholding tax	$ 1,200.00	
State withholding tax		
Payroll deductions (F.I.C.A.)	200.00	
Company (F.I.C.A.)	200.00	
State payroll deductions	200.00	
State unemployment—company	500.00	
Federal unemployment tax	150.00	
		2,450.00

SCHEDULE 16.2/STATEMENTS FOR A DECENTRALIZED JOB (Cont.)

Other accrued expenses:			
State and county property tax		200.00	
Accrued insurance—compensation		1,400.00	
Accrued insurance—P.L. and P.D.		200.00	
Accrued insurance—E.L. and O.D.			
Accrued power bill			
Accrued rental—outside equipment			
Unclaimed wages		150.00	
			1,950.00
Reserves:			
Dismantling and moving out		2,700.00	
Uncompleted work			
Unallocated credits		500.00	
			3,200.00
TOTAL LIABILITIES			$25,250.00
Due to head office			53,300.00
	Operations		
Contract revenue:	$175,500.00		
Cost of contract:	155,000.00		
		$20,500.00	
Other operations:		1,300.00	
			21,800.00
TOTAL LIABILITIES AND OPERATIONS			$100,350.00

Ecks and Wye Construction Co.
Expense Ledger—Contract 51
Mountain City, Calif.
At close of business for month of February, 19—

Plant and moving in:	*Additions for current month*	*Balance for job to date*	*Balance unamortized to date*
Temporary buildings	$ —	$ 5,000.00	$ 2,500.00
Utilities installations	—	2,000.00	1,000.00
Built-in construction plant	5,000.00	23,000.00	11,500.00
Unloading, assembling, and erection	—	2,000.00	1,000.00
Transportation	—	3,000.00	1,500.00
Dismantling and moving out	—	2,750.00	1,400.00
Miscellaneous			
TOTAL	$5,000.00	$37,750.00	$18,900.00

SCHEDULE 16.2/STATEMENTS FOR A DECENTRALIZED JOB (Cont.)

General expense			
Surety bond premium	$ —	$ 3,000.00	$ 1,500.00
Management and supervision salaries	200.00	1,500.00	—
Office salaries	300.00	1,000.00	—
Engineering salaries	200.00	500.00	—
Warehouse salaries			
Insurance—other than payroll insurance		200.00	150.00
Taxes—other than payroll taxes	100.00	200.00	—
Auto expense			
Warehouse expense	50.00	100.00	—
Home office—interest	100.00	200.00	
Home office—general expense	900.00	4,500.00	
Interest—other than home office			
Losses from bad accounts			
Telephone and telegraph	50.00	200.00	—
Light and power			
Legal expense			
Travel	100.00	200.00	—
Stationery and office supplies	50.00	100.00	—
Meals—mess hall	50.00	100.00	—
Safety expense—including hospital gain or loss			
Engineering supplies and expense			
Rent—office			
Depreciation—office equipment			
Camp, commissary and mess hall—net gain or loss	$1,500.00	$ 2,500.00	—
Cash discounts earned—credit	(25.00)	(100.00)	—
Miscellaneous general expense			
TOTAL	$3,575.00	$14,200.00	$ 1,650.00

SCHEDULE 16.2/STATEMENTS FOR A DECENTRALIZED JOB (Cont.)

Ecks and Wye Construction Co.
Job Cost Statement — Contract 51
Mountain City, Calif.

Week of month ending February 28, 19—.

Item	*Quantity*		*Amounts ($)*			*Unit costs*		
	Total contract	*To date*	*Actual cost to date*	*Estimated cost to date*	*Contract revenue to date*	*Actual*	*Esti-mated*	*Contract price*
1. Excavation—earth, cu yd	336,000	200,000	$94,000	$96,000	$110,000	$ 0.47	$ 0.48	$ 0.55
2. Excavation—rock, cu yd	4,000	3,500	8,050	8,050	8,750	2.30	2.30	2.50
3. Excavation—hand, cu yd	2,000	1,800	15,300	15,600	14,400	8.50	8.68	8.00
4. Reinforced steel in place, lb	35,000	10,000	1,900	2,400	2,500	0.19	0.24	0.25
5. Concrete in place, cu yd	1,800	528	35,550	35,904	39,600	67.33	68.00	75.00
6. Miscellaneous metal in place, lb	4,000	625	200	225	250	0.32	0.36	0.40
TOTAL			$155,000	$158,179	$175,500			

SCHEDULE 16.2/STATEMENTS FOR A DECENTRALIZED JOB (Cont.)

Ecks and Wye Construction Co.
Job Revenue Statement — Contract 51
Mountain City, Calif.

Week of month ending February 28, 19—.

Item	*Contract*			*This week*		*To date*		*Per cent completion*
	Quantity	*Price*	*Amount*	*Quantity*	*Amount*	*Quantity*	*Amount*	
1. Excavation — earth, cu yd	336,000	$ .55	$184,800			200,000	$110,000	59.5
2. Excavation — rock, cu yd	4,000	2.50	10,000			3,500	8,750	87.5
3. Excavation — hand, cu yd	2,000	8.00	16,000			1,800	14,400	90.0
4. Reinforcing steel in place, lb	35,000	.25	8,750			10,000	2,500	28.6
5. Concrete in place, cu yd	1,800	75.00	135,000			528	39,600	29.3
6. Miscellaneous metal in place, lb	4,000	.40	1,600			625	250	15.6
TOTAL			$356,150				$175,500	

SCHEDULE 16.2/STATEMENTS FOR A DECENTRALIZED JOB (Cont.)

Ecks and Wye Construction Co.
Accounts Receivable—Contract 51
Mountain City, Calif.
At close of business for month of February, 19—

Name	*Amount*	*Under 60 days*	*Over 60 days*	*Over 90 days*
Estimates				
E. Z. Doe Co., Inc. Progress billing 11	$28,500.00	$28,500.00	$	$
E. Z. Doe Co., Inc. Retained percentage	15,000.00	7,000.00	4,000.00	4,000.00
Progress billing 12 not yet approved	14,500.00	14,500.00		
	$58,000.00	$50,000.00	$4,000.00	$4,000.00
Employees				
W. T. Jones	$ 50.00	$ 50.00	$	
J. S. Smith	25.00		25.00	
	$ 75.00	$ 50.00	$ 25.00	
Miscellaneous				
Zee Equipment Co.	$ 1,900.00	$ 1,900.00	$	
Notany Co.	200.00		200.00	
	$ 2,100.00	$ 1,900.00	$ 200.00	

Ecks and Wye Construction Co.
Subcontract Accounts—Contract 51
Mountain City, Calif.
At close of business for month of February, 19—

Subcontractor	*Amount of subcontract*	*Amount of work performed*	*Due on estimates*	*Due on retained percentages*
ABC Concrete Co. 800 Main Street Chico, Calif.	$20,000.00	$8,500.00	$2,600.00	$950.00

SCHEDULE 16.2/STATEMENTS FOR A DECENTRALIZED JOB (Cont.)

Ecks and Wye Construction Co.
Monthly Report of Camp and Mess Operations—Contract 51
Mountain City, Calif.
At close of business for month of February, 19—

	Current month		*To date*	
Mess operations				
Mess revenue:				
Payroll deductions	$1,600.00		$2,500.00	
Cash meal sales	100.00		200.00	
Executive and guest meals	50.00		100.00	
Other mess revenue				
Total mess revenue		$ 1,750.00		$ 2,800.00
Mess expense:				
Beginning inventory	$1,450.00		$1,450.00	
Food purchased	1,200.00		2,100.00	
	$2,650.00		$3,550.00	
Less: Closing inventory	1,150.00		1,150.00	
Cost of food	$1,500.00		$2,400.00	
Fuel and supplies	200.00		300.00	
Labor	1,100.00		1,600.00	
Plant amortization	200.00		500.00	
Total mess costs		$ 3,000.00		4,800.00
NET GAIN (OR LOSS) FROM MESS		$(1,250.00)		$(2,000.00)
Average costs				
Total number meals served	2253		3733	
Cost per meal served	1.33		1.29	
Net loss per meal served	.55		.54	
Food cost per meal served	.666		.645	
Labor cost per meal served	.489		.429	
Supply cost per meal served	.089		.082	
Plant cost per meal served	.089		.134	
Total cost per meal	$1.33		$1.29	
Camp operations				
Camp revenue:				
Payroll deduction	$ 150.00		$ 300.00	
Other revenue				
Total camp revenue		$ 150.00		$300.00

SCHEDULE 16.2/STATEMENTS FOR A DECENTRALIZED JOB (Cont.)

Camp expense:				
Fuel, laundry, and supplies	$ 75.00		$ 150.00	
Labor	50.00		100.00	
Plant amortization	275.00		550.00	
Total camp costs		$ 400.00		$ 800.00
NET GAIN (OR LOSS) FROM CAMP		$ (250.00)		$ (500.00)
Capacity of camp (number of men)	30			
Average daily occupancy	25			
Average gain (or loss) per man-month	(10.00)		(10.00)	
Residence operations				
Residence revenue				
Residence costs				
GAIN (OR LOSS) FROM RESIDENCES				

Ecks and Wye Construction Co.
Summary of Cost and Revenue
(Cost-Plus-Fixed-Fee Contracts)
Contract 52, Mountain City, Calif., month ended February 28, 19—

Revenue as shown by job books:	*Job to date*	*Current year to date*	*Current month*
Work done to date			
Reimbursable costs billed to client	$30,000.00	$22,000.00	$ 8,500.00
Reimbursable costs unbilled or accrued	12,000.00	9,000.00	3,500.00
Fee earned	3,500.00	2,700.00	850.00
Equipment rental and other revenue from client	7,000.00	5,200.00	1,600.00
TOTAL REVENUE	$52,500.00	$38,900.00	$14,450.00
Cost of work done:			
Reimbursable costs	$42,000.00	$30,200.00	$11,600.00
Costs relating to contractor owned equipment	4,000.00	3,000.00	1,000.00
Total direct costs	$46,000.00	$33,200.00	$12,600.00
Net to contractor before nonreimbursable cost	$ 6,500.00	$ 5,700.00	$ 1,850.00

SCHEDULE 16.2/STATEMENTS FOR A DECENTRALIZED JOB (Cont.)

Nonreimbursable costs:			
General expense items nonreimbursable per contract	$ 350.00	$ 240.00	$ 120.00
Home office charges (if nonreimbursable)	1,100.00	1,065.00	30.00
Disallowed or suspended costs	50.00	30.00	15.00
Total nonreimbursable costs	$ 1,500.00	$ 1,335.00	$ 165.00
Operating profit	$ 5,000.00	$ 4,365.00	$ 1,685.00
Other operations, excess depreciation, etc.	$ 100.00	60.00	30.00
NET PROFIT AS SHOWN BY JOB BOOKS	$ 5,100.00	$ 4,425.00	$ 1,715.00

Estimated amount of contract, including change orders—$157,500.00
Amount of main office investment in contract (M-1) —$ 28,780.00
Date set for completion—June 30, 19—
Per cent of work done—33.33 Per cent of time elapsed—30

	Payrolls	*Company owned equipment depreciation*	*Company owned equipment rental to home office*
This month	$ 8,000.00		$2,000.00
Previous months	9,000.00		2,500.00
TOTALS	$17,000.00		$4,500.00

Superintendent

Office Manager

Ecks and Wye Construction Co.
Summary of Contract Volume and Uncompleted Work
Contract 52 Mountain City, Calif.
At close of business for month of February, 19—
Client's Name A.B.C. Co.

Type of contract: Unit price or lump sum_____ Bid__________
Cost-plus-fixed-fee__________ Negotiated_____

1. Amount of original contract		$120,000.00
Fee		12,000.00
2. Net change orders previous months	$15,000.00	
Fee	1,500.00	
3. Change orders this month (list):		
C.O. No. 2 extension—south wing	$ 8,181.81	
Fee	818.19	
Total change orders to date		$ 25,500.00

SCHEDULE 16.2/STATEMENTS FOR A DECENTRALIZED JOB (Cont.)

4. Actual variations in contract amount due to overrun (or underrun) of quantities on bid items completed to 19—	$
5. Rental revenue from contract owner not included above	
6. Estimated total amount of principal contract(s)	$
7. Other contract work not included in principal contract(s)	$
8. Total estimated contract volume	$157,500.00
9. Amount of work completed to date	$ 52,500.00
10. Uncompleted contract volume	$105,000.00
Date contract was physically completed (if completed)	
Expected date of physical completion (if not completed)	June 30, 19—

Instructions for Summary of Contract Volume and Uncompleted Work

1. *Amount of original contract:* Enter the amount which appears in the contract document, or if no amount is shown, estimate the total contract amount on the basis of the facts known at the time the contract was negotiated. For fixed-fee contracts include the estimated fee in the gross amount of the contract.

2. *Net amount of change orders previous month:* Enter the net amount of additive and deductive change orders reported in detail on previous reports. Include only approved changes.

3. *Change orders current month (list):* Enter each change order that affects the amount of the contract, and the amount (if any) by which the contract is changed. If change order shows no definite amount, enter the best available estimate of the amount of the change. For this purpose, treat extra work orders as changes, but clearly designate them as extra work.

4. *Actual variations in contract amount due to overruns (or underruns) of quantities on bid items completed:* Enter the sum of the variations in contract volume arising from differences in quantities paid for and quantities estimated in the contract, or from change orders on bid items completed and for which final quantities have been determined. (Supporting list by bid item should be available in job files.) Enter differences between estimated costs or fee and actual costs or fee in the case of cost-plus-fixed-fee contracts. This amount must be adjusted each month to agree with actual billings.

5. *Rental revenue from contract owner not included above:* Enter the amount of equipment rentals billed to the contract owner to date, but only to the extent that such equipment rentals are not included in the contract under items 1, 2, or 3 above.

6. *Estimated total amount of principal contract(s):* This amount, the sum of the preceding items, should represent the known volume of work under contract at the current date. If additional overruns or underruns are expected

SCHEDULE 16.2/STATEMENTS FOR A DECENTRALIZED JOB (Cont.)

to be substantial, the amount should be included here and supported by a special schedule.

7. *Other contract work not included in principal contract(s):* Enter here the total of work completed by and on the contract for others than the owner. This item will include work for subcontractors and outsiders with contract equipment and labor. It will include bare equipment rental from others than contract owner.

8. *Total estimated contract volume:* Enter the total of items 5 and 6 above.

9. *Amount of work completed to date:* This amount should agree with the total contract revenue as shown on the "Summary of cost and revenue" under "Total revenue."

10. *Uncompleted contract volume:* Enter here the difference between items 7 and 8 above.

Cost and Revenue Detail

Location: Mountain City, Calif. Month: February. Contract 52

Contract items and quantities	*Cost*		*Contract price*	
	Total	*Unit*	*Total*	*Unit*
Nonreimbursable costs:				
General expense items:				
Travel expense of John Jones, project manager	$ 200.00			
Donation—American Red Cross	100.00			
Employee entertainment (party)	50.00			
	$ 350.00			
Home office charges:				
Interest on investment	$ 50.00			
Engineering salaries and expenses	1,050.00			
	$1,100.00			
Disallowed costs:				
Replacement on defective concrete in foundation	$ 50.00			
	$ 50.00			

It would be impractical to attempt to illustrate the great variety of forms used to report centralized job site activities. The degree of centralization varies so widely that forms that would be suitable for one job might be completely inadequate for the next.

If complete centralization exists, any documents like delivery tickets or time cards are simply sent to the main office. If payrolls and vouchers are made, and paychecks and accounts payable checks prepared and distributed on the job, copies of all these and of the voucher register should be sent to the main office. Suitable forms have been illustrated in preceding chapters.

A joint venture in the construction industry is usually a special partnership, of two or more companies formed to do a particular job. Hence the statements shown in Schedule 16.2 would be adequate for its purposes. However, because it would be necessary to show in the net worth section of the balance sheet the details regarding each venturer's equity (cash advanced, share of earnings, special allowances for interest or overhead, withdrawals, and so on), it would be necessary to prepare the operating statement separately.

Some contractors whose jobs are decentralized issue the reports on a comparative basis, or show separately the operating figures for the current period and for the job to date. Others prefer to make a comparative analysis after the statements come in from the job. The summary of cost and revenue for a cost-plus-fixed-fee job (Schedule 16.2) is an example of the comparative type of statement.

To make this type of statement for a cost-plus-fixed-fee job the records should be kept by the "profit-and-loss" rather than by the "owner's equity" method of cost-plus-fixed-fee accounting.

The balance sheet with the operating statement included in the net worth section can be applied without much difficulty to the "owner's equity" type of cost-plus-fixed-fee accounting by showing reimbursed costs and earned fees in the net worth section. The cost statement can be applied without difficulty to "cost-plus" contracts, as can the mess hall report.

The summary of cost and revenue can be easily applied to any kind of contract by changing the account titles to suit the individual job, or to reflect the company's standard account classification.

The summary of volume and uncompleted work should be used to supply management with the facts not shown by the financial statements as such.

Cost reports and job management

Probably the most important of all the cost reports is the daily labor cost report (Fig. 8.21). Through it, job management can keep a day-to-day check on the most elusive element in the whole field of construction costs. If this one report is received daily, and is accurate, there is no better guide for the application of management control. An experienced construction man can compare the labor cost to date, the total estimated labor cost, and the physical work still to be done on any particular work item, and tell with great accuracy how well that part of the job is progressing. In a company with a number of smaller jobs, or on a large job with numerous work items, it is on this basis that the man in charge decides where to spend his own time and that of his supervisory staff.

Similar reports may be made daily on materials consumed or placed and on equipment time. Both serve a purpose similar to that of the labor cost report. When time and staff permit, a daily cost summary (Fig. 16.3) can be extremely useful. Otherwise, the labor summary is usually the most effective tool in helping job management direct its efforts most effectively.

On some types of jobs, the most effective unit of measurement is the amount of material moved or placed. One illustration of that type of report can be found in the grade foreman's report (Fig. 10.13). On pile driving jobs the daily report might cover the number of feet of piling driven and the unit cost per foot. On concrete jobs the number of cubic yards placed, and on pier or dock jobs the number of MBF (thousand "board feet," or feet board measure) of lumber placed might be reported. On this type of report the unit cost of the work done should be watched closely. Any substantial deviation from the estimated unit cost would constitute a warning to management, as would a comparable deviation in labor cost. The important points are these:

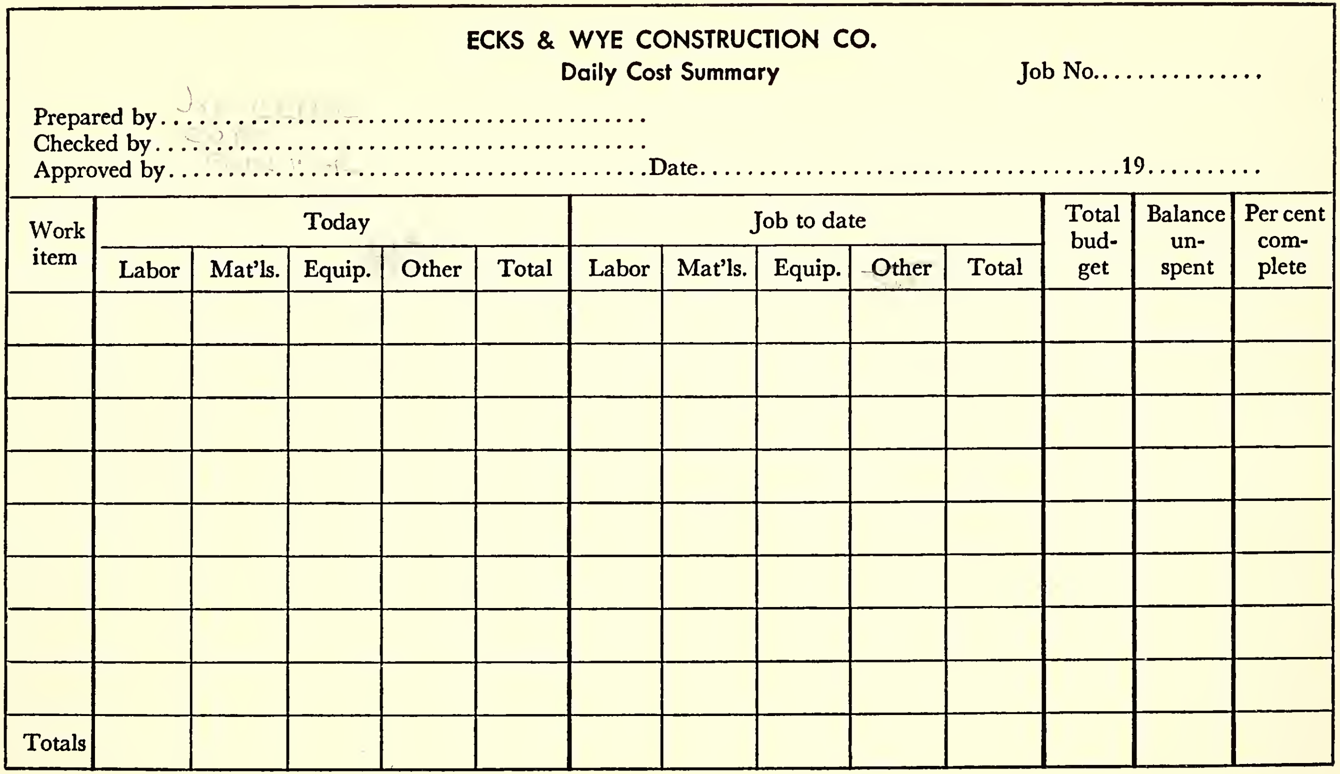
1. Job management is a day-to-day and hour-to-hour matter, and it must have progress data on that basis. If it is to be done properly the information on which it acts must be current and correct.

2. The exact information needed to control job progress varies according to the nature of the jobs and of the people who manage them. It is better, therefore, to determine exactly what information is needed and to design a form to present it, rather than to try to force all job progress information to conform to a theoretical ideal.

3. The only reason for daily cost figures is to help job management direct its efforts where they will do the most good. It is only when this purpose is accomplished that the cost of compiling daily figures can be justified.

Job management often needs a detailed analysis of cost on a particular work item. If the job cost ledger (Fig. 15.1) has been kept, the information should be available there. If the daily cost summary (Fig. 16.3) has been kept, the answer would appear in that report. If neither has been kept, then it may be necessary to extract the needed information from such basic data as time cards and purchase invoices.

Such information might be needed for a number of purposes. For



ECKS & WYE CONSTRUCTION CO.

Daily Cost Summary

Job No..............

Prepared by..
Checked by..
Approved by..Date....................................19.........

Work item	Today					Job to date					Total budget	Balance unspent	Per cent complete
	Labor	Mat'ls.	Equip.	Other	Total	Labor	Mat'ls.	Equip.	Other	Total			
Totals													

Fig. 16.3 Daily cost summary

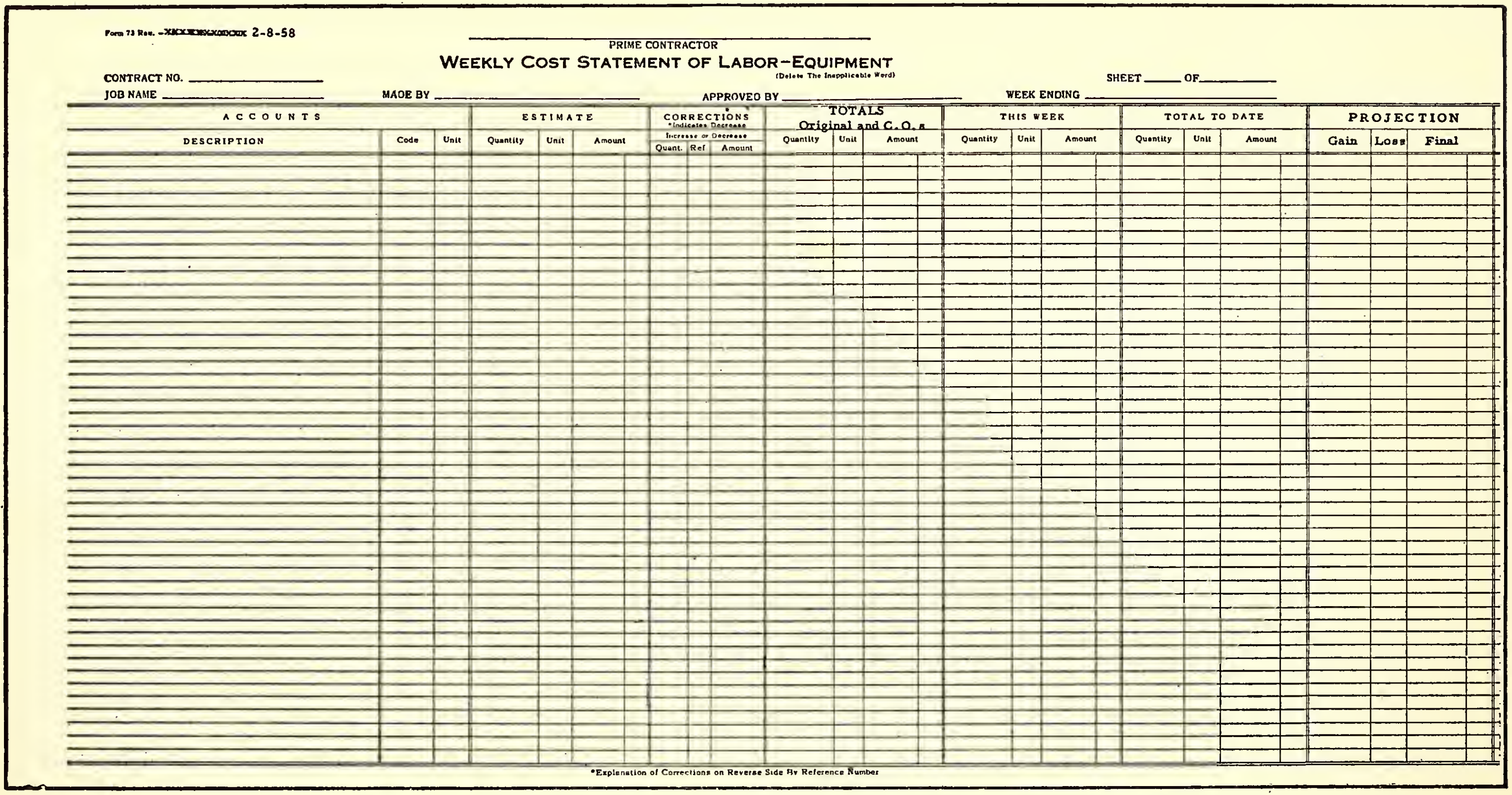
example, price negotiations for a change order may be in progress; daily cost reports may have indicated differences between the job estimate and the actual operating results that require further analysis; or current results on this job may be needed for a guide in bidding new work or justifying a claim in renegotiation or an estimate for financing purposes. Whether any or all of these possibilities justify the cost of a job cost ledger is, of course, a problem peculiar to each contractor.

Cumulative cost figures, by individual work items and for the entire job, are meaningful to job management because they may be compared to the total contract price to show how much money is left in the contract and in the budget for each work item to complete the work. A cumulative form for labor or equipment (Fig. 16.4) provides such information. This information, combined with unit costs and elapsed time figures, indicates to job management what it must do in order to earn the estimated profit on the job. For example, if unit costs are below the estimate, but time is running short, some overtime to bring the work up to schedule may be justified. On the other hand, if unit costs are high and the job is lagging it means more and better supervision is needed quickly to bring the troublesome work item back into line to prevent loss. It may mean that work is being done that should be compensated as an "extra" and, if so, the sooner the "extra" is claimed, the better. Usually it means that either the work is not being done efficiently, or the job estimate is wrong. In either case, prompt attention from job management is required.

Cost reports and general management

There are two indicators of satisfactory job progress—time and money. Up to a certain point the faster the work progresses, the less it costs. This is true for several reasons. Rapid progress means planning has been effective, and there are few time-consuming errors to correct. Also, the faster the job progresses, the lower the amount of overhead that each unit of production has to carry.

Beyond a certain rate, however, each unit of production increases in cost. Overtime, inadequate space, and mistakes resulting from speed and pressure all contribute to this loss of efficiency. To determine how closely any particular job can or should be run to this point of diminishing returns, and to see that it keeps running at the predetermined rate, is the job of general management. One of the tools which general management uses to accomplish this purpose is the job progress report (Fig. 16.4). This form shows one week's progress on



Form 73 Rev. –XXXXXXXXXX 2-8-58

PRIME CONTRACTOR

WEEKLY COST STATEMENT OF LABOR–EQUIPMENT

(Delete The Inapplicable Word)

CONTRACT NO. ____________

JOB NAME ____________

MADE BY ____________

APPROVED BY ____________

SHEET ____ OF ____

WEEK ENDING ____________

ACCOUNTS			ESTIMATE			CORRECTIONS *Indicates Decrease			TOTALS Original and C. O. s			THIS WEEK			TOTAL TO DATE			PROJECTION		
						Increase or Decrease														
DESCRIPTION	Code	Unit	Quantity	Unit	Amount	Quant.	Ref	Amount	Quantity	Unit	Amount	Quantity	Unit	Amount	Quantity	Unit	Amount	Gain	Loss	Final

*Explanation of Corrections on Reverse Side By Reference Number

Fig. 16.4 Weekly cost statement of labor or equipment

Note that unit costs for each work item are compared with those estimated for that item.

one job. It breaks the job down into work items, and compares the key variables (labor and equipment costs) on each work item with the totals estimated for that item, the total labor or equipment cost of the work accomplished for the week, and for the job to date, and the unit costs according to the estimate and according to the actual operations. These data, when combined with the more complete figures on the monthly statement, give most key executives the current money figures they need.

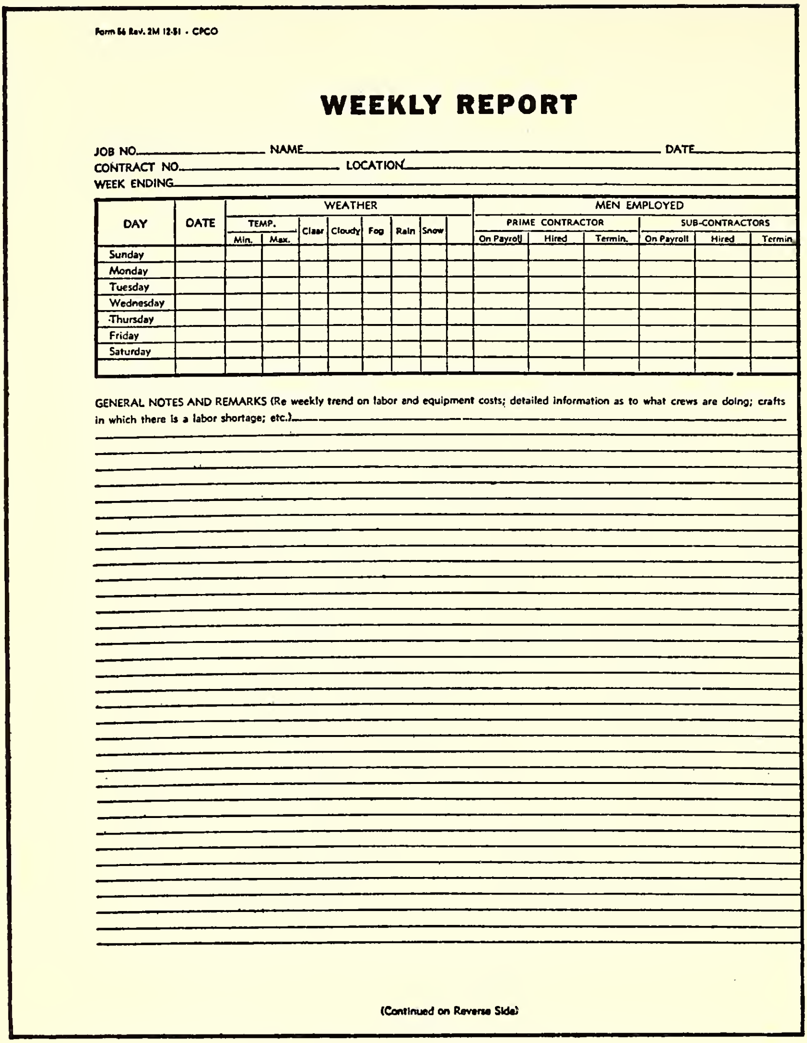
But money figures alone rarely tell the whole story. To supplement them it is usually necessary to have an additional weekly report (Fig. 16.5). This report covers weather, work force, special job conditions, time progress, and financial forecast to complete the analysis of job operations already developed from the financial statements and the weekly cost reports.

One of the most commonly discussed and least understood uses of cost reports is in bidding other work. It is easy to think that, having done a certain operation before under a variety of circumstances and having kept accurate cost records on it, the unit costs might be helpful in bidding.

Actually, this practice is dangerous because it tends to lead to bidding at a fixed price per unit of work. For example, a sewer contractor might find his trenching costs are running $1.00 per lineal ft. So long as he is digging the same type of trench through the same type of material he may use this figure in bidding, but suppose in the next job trenching is through loose, sandy soil that will not hold a bank. Or, suppose the cost figures were developed in an area where the soil is loam overlying a loose shale at about 4 ft, whereas the area where the new work is to be done has patches of caliche that have to be blasted before it can be dug. Or, suppose the previous jobs had been in open areas, permitting machine digging, whereas the job being bid is in close quarters and will require a large proportion of hand excavation.

The risk in using cost figures in bidding lies in the ease with which an estimator may assume that the same kind of work will cost the same on all jobs. If unit prices are available from similar jobs, it is easy for an estimator, working against a bid opening deadline, to use them without considering the individual problems of the job being bid.

On the other hand, if averages may be safely used, good unit cost figures can make it possible for an estimator to prepare more bids and do a faster and better job. Thus, on estimating costs in tract housing developments, a degree of uniformity is assured, and the



Form 56 Rev. 2M 12-51 · CPCO

WEEKLY REPORT

JOB NO.________ NAME________ DATE________
CONTRACT NO.________ LOCATION________
WEEK ENDING________

DAY	DATE	WEATHER								MEN EMPLOYED					
		TEMP.		Clear	Cloudy	Fog	Rain	Snow		PRIME CONTRACTOR			SUB-CONTRACTORS		
		Min.	Max.							On Payroll	Hired	Termin.	On Payroll	Hired	Termin.
Sunday															
Monday															
Tuesday															
Wednesday															
Thursday															
Friday															
Saturday															

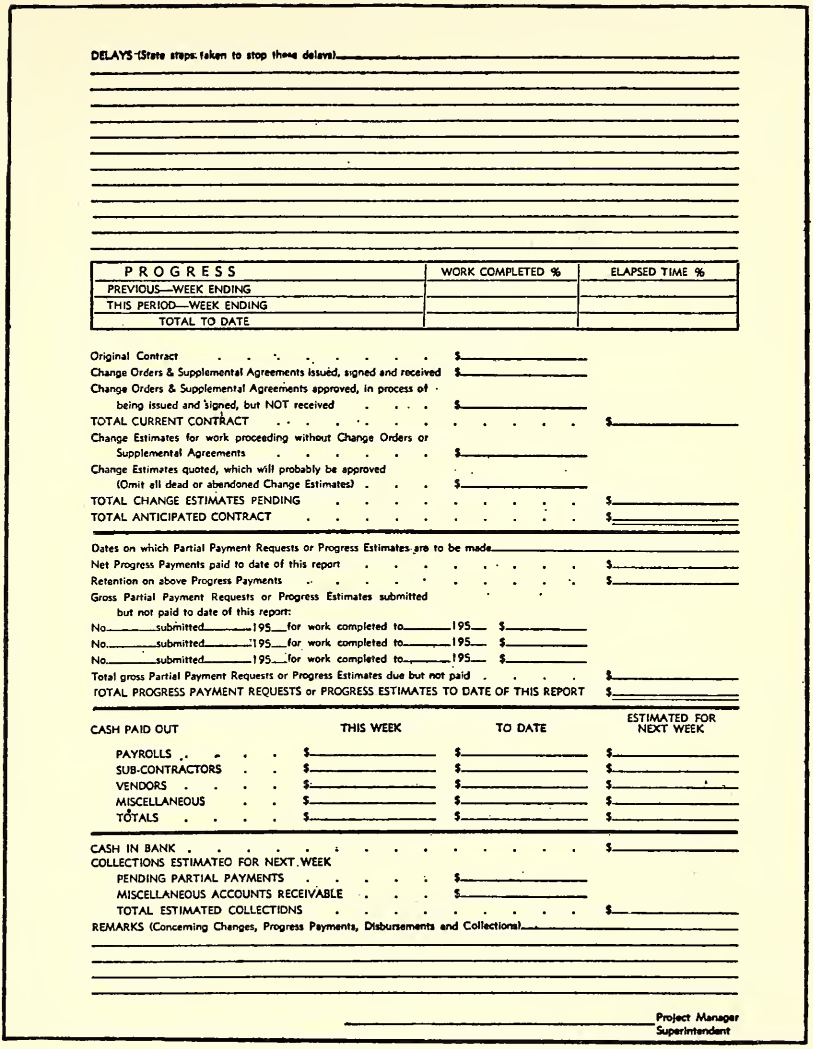
GENERAL NOTES AND REMARKS (Re weekly trend on labor and equipment costs; detailed information as to what crews are doing; crafts in which there is a labor shortage; etc.)________

(Continued on Reverse Side)

Fig. 16.5a Weekly report—Face

estimator can assume, for example, that certain plumbing assemblies may safely be prefabricated in the shop, or that a given number of foundations can be poured in a day.

Probably the safest way to use cost figures in bidding is as a check on the estimator's thinking. If he is estimating new work and the difference between the bid and the former actual performance is sub-



DELAYS (State steps taken to stop these delays) ____________

PROGRESS	WORK COMPLETED %	ELAPSED TIME %
PREVIOUS—WEEK ENDING		
THIS PERIOD—WEEK ENDING		
TOTAL TO DATE		

Original Contract . . . . $______
Change Orders & Supplemental Agreements issued, signed and received $______
Change Orders & Supplemental Agreements approved, in process of being issued and signed, but NOT received . . . . $______
TOTAL CURRENT CONTRACT . . . . $______
Change Estimates for work proceeding without Change Orders or Supplemental Agreements . . . . $______
Change Estimates quoted, which will probably be approved (Omit all dead or abandoned Change Estimates) . . . $______
TOTAL CHANGE ESTIMATES PENDING . . . . $______
TOTAL ANTICIPATED CONTRACT . . . . $______

Dates on which Partial Payment Requests or Progress Estimates are to be made ______
Net Progress Payments paid to date of this report . . . . $______
Retention on above Progress Payments . . . . $______
Gross Partial Payment Requests or Progress Estimates submitted but not paid to date of this report:
No.____ submitted____ 195__ for work completed to____ 195__ $______
No.____ submitted____ 195__ for work completed to____ 195__ $______
No.____ submitted____ 195__ for work completed to____ 195__ $______
Total gross Partial Payment Requests or Progress Estimates due but not paid . . . . . $______
TOTAL PROGRESS PAYMENT REQUESTS or PROGRESS ESTIMATES TO DATE OF THIS REPORT $______

CASH PAID OUT	THIS WEEK	TO DATE	ESTIMATED FOR NEXT WEEK
PAYROLLS	$______	$______	$______
SUB-CONTRACTORS . .	$______	$______	$______
VENDORS	$______	$______	$______
MISCELLANEOUS . .	$______	$______	$______
TOTALS	$______	$______	$______

CASH IN BANK . . . . $______
COLLECTIONS ESTIMATED FOR NEXT WEEK
PENDING PARTIAL PAYMENTS . . . . . . $______
MISCELLANEOUS ACCOUNTS RECEIVABLE . . . . $______
TOTAL ESTIMATED COLLECTIONS . . . . $______
REMARKS (Concerning Changes, Progress Payments, Disbursements and Collections) ______

______ Project Manager
Superintendent

Fig. 16.5b Weekly report—Reverse

stantial, then he should find the reasons for the difference. If he is analyzing operations to find the reasons for a difference between unit costs estimated and unit costs actually incurred on a current job, deviations in the unit cost of the same type of work on other jobs may provide the answers.

The most useful application of cost figures to bidding is the analysis of each job after it is complete, to account for differences between the estimate and the actual result. In this way errors in the methods used in preparing bid estimates can be found and corrected. Equally important, methods of operation assumed by the estimator can be compared with those followed on the job, and the results of such study can be considered on the next job involving similar work.

17

Internal Auditing

Internal auditing, as such, has not been widely practiced in the construction industry. A few of the larger companies have maintained crews consisting of one or more accountants who have the title of "auditor," and some follow a more or less systematic internal auditing program.

For the great majority of contractors, however, any auditing that may be done is performed by various members of the accounting or clerical staffs on a "hit or miss" basis. In many of the smaller construction companies, the public accounting firm employed to prepare the tax returns and review the year-end financial statements carries out whatever auditing is done.

Field auditing

The general attitude of most contractors toward internal auditing is pretty well summed up by one California contractor in these words: "What is there to audit? I see all the bills before they are paid and I sign all the checks. Besides, my bookkeeper is so honest he wouldn't touch a penny."

This reasoning is sound as long as the company is small enough so that one man knows the jobs well enough to identify the invoices and the employees, and knows whether the invoices are correct and whether the employees shown on the payroll are actually on the job. This system can (and does) work in larger operations where the auditing functions are delegated to the project manager or superintendent on large, decentralized jobs.

There is at least one good reason why a hard-headed, fraud-conscious industry like the construction industry has seen fit to take the time of its top management to do its internal auditing. The reason is that very few accountants have the technical knowledge of construction work necessary to do the job as it needs to be done. In order to be fully effective in doing the internal auditing in a construction company, the auditor should be able to review the plans, observe the job, and know approximately what the records should show. He should be able to go to the records and know whether they reflect the physical progress he has observed. He must also know the sequence in which the physical work is done. Payroll padding has often been detected simply because the labor charges on some work item were out of line with physical progress, or were charged to a work item which was not in sequence with the rest of the job.

Also, the top management of most construction companies is made up of engineers and operating men who look on auditing as mere routine figure-checking. They do not think of the function they perform, when they review payrolls and vouchers, and sign checks, as auditing. They regard this function as far too important to fit their idea of auditing.

Among some of the larger construction companies, the use of special internal auditors has begun to gain some backing, largely because the demands on the time of project managers and superintendents has become so great that some division of work has proved necessary. Also, as the industry becomes more accounting-minded, there is increased recognition of the need for more accounting-type auditing tempered by a great deal of technical construction knowledge.

To summarize, most of the auditing done on construction jobs today is done by the person who reviews the payrolls and the vouchers, and signs the checks. It is done either at the time the checks are signed, or during the preparation of the payrolls and the vouchers, or at both times. The accounting personnel are usually responsible for the comparisons between final vouchers and supporting documents, and for mathematical accuracy. The project manager or the superintendent (or sometimes the job engineer) reviews the checks and supporting documents for over-all propriety and reasonableness. Any additional internal auditing is done by head office personnel who call at the jobs to see if the routines called for by the company's procedure manual are being followed.

General office auditing

When auditing is done in the head office, it follows, in many respects, the pattern described for the field. However, the farther auditing is removed from the point of actual operations, the more it tends to take on the character of a clerical and accounting check and to lose the characteristics of critical analysis it normally has when done in the field. There are two important reasons for this tendency:

1. When a centralized system is in use, the demands on the time of the principals are so great that there is a tendency to treat the internal auditing lightly.
2. If the person doing the auditing is an accountant or an office engineer who lacks detailed knowledge of the job itself, he has no basis for comparison beyond the form followed and its apparent compliance with the system.

Accordingly, when a contractor's accounting is centralized, the internal auditing needs to be done by someone who has direct personal knowledge of the job, and who has a personal interest in its outcome.

No internal auditing program is more effective than the procedure for following up on its findings. If auditing is carried out on the basis described, any errors are corrected at once and there is no need for further follow-up. A number of the more progressive companies are finding that something more is needed, particularly if general management is separated from job management. Someone should take a thorough, informed, and unbiased look at what is happening on each job and then, after taking time to think about it, analyze it and make suggestions to management on how the operation can be improved. This step cannot be taken by job management because it has a project to complete. It cannot be done by the ordinary accountant or auditor because he lacks the construction know-how. It cannot be done by the ordinary superintendent or engineer because he lacks knowledge of accounting, taxation, auditing, and finance. Most companies must start with an accountant and teach him what he needs to know about construction, or start with an engineer and teach him what he needs to know about accounting, taxation, auditing, and finance. Those men who already have this combined knowledge are hard to find, and are usually earning substantial salaries.

Once a man is prepared by training to audit construction jobs, he still needs two important tools. First, he needs auditable records. In other words, he needs adequate documents and support for the transactions he is reviewing. A good example is the general journal. Complete explanations are often difficult in the customary two-column journal, particularly if the entry is based on a large work sheet. Cross references to the work sheet would be adequate as long as the sheet can be found, but if it becomes lost or misplaced, it is next to impossible to reconstruct the basis for the entry. For this reason, progressive construction firms are using journal vouchers so that the supporting papers can be at hand when needed, as they are with disbursement vouchers.

Second, the auditor needs a checklist to remind him of things he might otherwise miss. One such checklist is shown in Schedule 17.1. Here, the emphasis is on accounting, but it need not be confined to that. Each company, of course, should prepare its own checklist.

SCHEDULE 17.1/CHECKLIST FOR INTERNAL AUDITOR

JOB AUDIT REPORT

Job:
Location:
Dates Visited:

	Yes	No	Not applicable	See comment
A. Cash on hand				
1. Did you count it?				
2. Did you reconcile it with the books?				
3. Did you consider all possible sources?				
4. Do you feel certain that all cash from miscellaneous sources is being recorded?				
5. What did you do to satisfy yourself that it is (or is not) being recorded?				
6. Do we cash personal checks from cash on hand?				
B. Cash in bank				
1. Did you reconcile all bank accounts?				
2. Did you trace out the reconciling items in last month's reconciliations?				
3. Are any items from last month still open?				
4. If so, have you satisfied yourself that they are proper?				
5. Did you test-check the signatures on the checks?				

SCHEDULE 17.1/CHECKLIST FOR AUDITOR (Cont.)

	Yes	No	Not applicable	See comment
6. In reconciling the payroll account, did you compare the signatures and endorsements on termination checks with those on the two preceding paychecks?				
7. Did you make a test-check of the endorsements on the checks?				
8. Any exceptions not satisfactorily explained?				
9. Did you make a test comparison of the checks against the supporting payrolls and vouchers? What steps were followed in the test?				
10. Did you compare the deposits as shown on the statements with the books, the detail of the duplicate deposit slips, and the underlying estimates, invoices, cash reports, and so on?				
11. Are receipts from extra work being properly accounted for?				
12. Did all duplicate deposit slips bear the bank's stamp and receipt?				
13. Did any duplicate deposit slips show signs of alteration?				
14. Was there any substantial lag between receipt and deposit of funds?				
15. Did any part of your examination give indication of signature irregularities, such as checks going through on only one signature?				
16. Did you account for all check numbers?				
17. Is the name of the payee visible to the signer when checks are signed?				
18. Did you notice any weakness in the control of cash that should be strengthened?				
C. *Purchasing and vouchering*				
1. Do you have a list of persons authorized to sign requisitions?				
2. Were any requisitions not signed by an authorized signer?				
3. Were requisitions coded?				

SCHEDULE 17.1/CHECKLIST FOR AUDITOR (Cont.)

	Yes	No	Not applicable	See comment
4. Did you test the coding for reasonableness?				
5. Were any purchase orders not covered by requisitions?				
6. If there were any, was the omission satisfactorily explained?				
7. Are purchase orders priced and coded?				
8. If not, was omission satisfactorily explained?				
9. Do you have a list of individuals authorized to sign purchase orders?				
10. Did you test-check the purchase orders for authorized signatures?				
11. Any exceptions?				
12. Are purchase orders issued at the time of purchase?				
13. If not, are confirming orders sent out before receipt of the invoice?				
14. Did you investigate the procedure for handling back orders?				
15. Is it adequate to prevent duplicate shipments?				
16. Are purchase orders checked, before being issued, by someone not under the purchasing agent's control?				
17. Is numerical control maintained on purchase orders?				
18. Are blanket purchase orders used?				
19. If so, are there proper safeguards to prevent misuse?				
20. Are receiving memoranda prepared at the time goods are received?				
21. Are they compared with the purchase orders by someone not under the control of the individuals controlling the warehouse or the purchasing?				
22. Are vendors' invoices received by the accounting department before anyone else?				
23. Are vendors' invoices compared with the purchase order and receiving memoranda?				

SCHEDULE 17.1/CHECKLIST FOR AUDITOR (Cont.)

	Yes	No	Not applicable	See comment
24. Did you test-check vouchers to see that the system is being followed?				
25. Did your test-check of vouchers include a test of pricing, extensions, and discounts claimed?				
26. Did you see evidence of adequate follow-up on vendor's invoices bearing a discount to assure the taking of all discounts?				
27. Is there any preaudit of vouchers and checks before checks are released?				
28. If so, is it effective?				
29. Does the project manager or superintendent see all vouchers?				
30. Does he actually review them or just sign them?				
31. Do you have a list of authorized check signers?				
32. Did you see any evidence of presigning of checks?				
33. Are documents supporting paid vouchers stamped to prevent reuse?				
D. *Receiving and warehousing*				
1. Is responsibility for receipt of materials and supplies fixed?				
2. Is an adequate system in effect to check incoming materials and supplies?				
3. Are adequate receiving memoranda prepared?				
4. Is there any procedure for checking on the person who receives materials and supplies?				
5. Is there any attempt to keep a perpetual warehouse inventory?				
6. If so, is the account kept in terms of units rather than money?				
7. If not, is there a satisfactory control on warehouse stocks by other means? (If other means are used, describe in comments.)				

SCHEDULE 17.1/CHECKLIST FOR AUDITOR (Cont.)

	Yes	No	Not applicable	See comment
8. If no warehouse account is maintained, is there an adequate system for controlling charges for purchased materials and supplies to work items?				
9. Is the system being followed? What did you do to check this point?				
10. On the basis of your review of the procedures, personnel, and records, do you believe that all incoming materials and supplies are being properly checked and accounted for?				
11. Do you believe that materials and supplies being taken from the warehouse are being accounted for correctly?				
E. *Timekeeping and payroll*				
1. Have you watched the operation of the system for reporting field time—brass, cards, foreman's report, or some combination of the three? Describe briefly the system in use and its operation.				
2. Did you check at least one payroll?				
3. Did you supervise the distribution of at least one week's paychecks?				
4. Were there any complaints from the men on the accuracy of their checks for the last two pay periods?				
5. If so, did you secure satisfactory explanations of the claimed differences?				
6. Are the personnel records in satisfactory condition?				
7. Did you make test-checks on the hiring and termination procedures?				
8. If the job uses field timekeepers, did you check the terminations on their reports? If not, explain how attendance of employees is checked by the job.				
9. Is such a check effectively maintained?				
10. Did you check the rates of pay against the union agreement?				
11. If such a check is made, does it include variable wage rates?				

SCHEDULE 17.1/CHECKLIST FOR AUDITOR (Cont.)

	Yes	No	Not applicable	See comment
12. When a man is transferred from one crew to another does the second foreman turn in his time for the entire day?				
13. Is there any possibility that both foremen might report his time?				
14. Is there an adequate control on identification badges?				
15. When time comes in from the field is it subjected to any check before being entered in the records?				
16. Would there be any way of detecting duplications or omissions?				
17. If the job is subject to the Bacon–Davis Act, have you checked the hourly rates with the specifications?				
18. Did you note any possible violations of the Copeland antikickback law?				
19. Did you check the specifications for requirements regarding overtime?				
20. If there are any, are they being observed?				
21. Did you trace any checks to the employee's earnings record?				
22. Did you secure satisfactory explanations for all split checks (when the employee was paid with two or more checks for the same period)?				
23. If facsimile signatures are used, is a satisfactory control kept on the machines and plates?				
24. Is there any postaudit on payrolls?				
25. Is it made by someone outside the payroll department?				
26. Does it include a check of all documents supporting earnings of all employees paid off during the week and test-checks of comparable documents of other employees?				
27. Have you looked into the procedure for handling garnishments and attachments?				

SCHEDULE 17.1/CHECKLIST FOR AUDITOR (Cont.)

	Yes	No	Not applicable	See comment
28. Have you any suggestions for strengthening internal control of payroll and timekeeping?				
F. Cost accounting				
1. Has the original estimate been revised to reflect changes in the manner of doing the job?				
2. Are labor costs reported daily?				
3. Are equipment costs reported daily?				
4. Did you look into the possibilities that costs or quantities of materials, or both, might exceed estimates?				
5. Is the cost of extra work segregated?				
6. Is extra work incurred only on written order signed by or for the client?				
7. If the job is using ready-mixed concrete, dry mix, or similar materials, are comparisons being made between quantities shown on vendors' billings and quantities actually used?				
8. Are labor, materials, and equipment charges coded by the engineering department and checked by the accounting department?				
9. If so, is the check effective?				
10. If any attempt were made to divert costs from one work item to another, would present procedures disclose and correct the practice?				
11. Have you test-checked the cost codings and traced them to the cost ledger?				
12. Is the cost ledger up to date?				
13. How often are cost ledger postings made?				
14. If unit costs as of last night were required on any particular work item could they be provided some time today?				
15. If not, how long would it take and why?				
16. Can purchase commitments be determined at the close of any particular day?				

SCHEDULE 17.1/CHECKLIST FOR AUDITOR (Cont.)

	Yes	No	Not applicable	See comment
17. Can the cost per hour to operate any particular piece of equipment or any particular type of equipment be determined quickly and accurately?				
18. If the job is a joint venture, did you check the rentals paid to each joint venturer against equipment time records and the rental schedule in the joint venture agreement?				
19. Can repair and maintenance costs on all equipment be determined quickly from the records?				
20. Can repair and maintenance costs be determined by individual units and by types of equipment?				
21. Did you check equipment time records against rental schedules?				
22. If so, was there any evidence of idle equipment that should be terminated?				
23. If there is a mess hall or a camp, did you check the costs per meal and the costs per man-day?				
24. Did you check the computations of percentages of completion?				
25. If so, what method was used? Do you consider it sound in view of the nature of the job?				
26. Did you inspect the work visually and compare what you saw with the percentages of completion shown for the various work items?				
27. Did you encounter any confusion about which work item should be charged with certain costs?				
28. How were such items being handled?				
29. Would it be feasible to record man-hours and equipment hours as well as dollar costs?				
30. If you were the project manager would you feel safe in making decisions based on our cost figures? If not, why?				

SCHEDULE 17.1/CHECKLIST FOR AUDITOR (Cont.)

	Yes	No	Not applicable	See comment
31. If you were an estimator would you feel safe in relying on our cost figures in bidding a comparable job? If not, why?				
32. Have you any suggestions for improving our job cost accounting?				
G. *General accounting*				
1. Did you make test-checks of the accuracy of coding vouchers?				
2. Did you trace the entries to the books of original entry?				
3. Did you test the footings of the books of original entry?				
4. Did you test-check postings and footings in the general ledger?				
5. Did you check the figures in the last financial statements with the general ledger?				
6. Did they agree?				
7. Did you check all general journal entries?				
8. If so, were they proper?				
9. Were they properly authorized?				
10. Were explanations complete and accurate?				
11. Did you analyze all deferred income and deferred cost accounts?				
12. If so, were the deferred items properly supported?				
13. Does the job maintain an equipment ledger?				
14. Does the job maintain a subcontract ledger?				
15. Did you review subcontract retentions?				
16. Were any released in advance without consent of the subcontractor's bonding company?				
17. Are any being held that should be released?				
18. Did you reconcile all subsidiary ledgers with the related general ledger control accounts?				

SCHEDULE 17.1/CHECKLIST FOR AUDITOR (Cont.)

	Yes	No	Not applicable	See comment
19. If any inventory accounts are carried did you see the actual inventory to see if it looked reasonable in relation to the book amount?				
20. Did you review receivables and payables for questionable items?				
21. Do the income accounts and the related receivables reflect all items of sundry income and extra work?				
22. Are you satisfied that the receivables are in order?				
23. What did you do to satisfy yourself on the point?				
24. Did you review the correspondence file for indications of unusual or questionable items?				
H. Office procedure				
1. Are files orderly and complete?				
2. Is filing kept up to date?				
3. Do employees keep desk files?				
4. Are papers put away and desks cleared at night?				
5. Are blank checks controlled?				
6. Is the office work being properly scheduled?				
7. Are insurance reports made promptly at the end of the month?				
8. Are financial statements prepared promptly?				
9. Is the work so scheduled as to allow ample time for the preparation of tax returns required to be filed and tax data required by the general office?				

Comments

Question No.

18

Camp, Mess Hall, Commissary, and Protective Functions

The first step in setting up a camp, mess hall, or commissary, is to get from the manager a requisition for necessary purchases. Most experienced camp managers will have their own checklists, and these will vary a great deal according to the size and location of the jobs the manager has worked on in the past. Schedules 18.1–18.4 provide checklists of equipment and supplies for kitchen, mess hall, and camp.

Once the requisition is completed, purchase orders (Chap. 5) are issued for the basic initial requirements.

Forms and procedures

The principles followed in controlling materials and supplies (Chap. 9) apply to camp, mess hall, and commissary inventories, but with special emphasis on protection from theft. If camp, mess hall, and commissary inventories are not kept under lock and key, and access is not carefully controlled, losses can become serious very quickly.

Whenever a camp, mess hall, or commissary is justified, a reasonable expenditure should be made to provide each activity with its own adequate, locked storage room. Once each storeroom is established, a basic inventory list should be prepared. Usually it is a good idea to design a special sheet (Fig. 18.1) for each type of inventory.

SCHEDULE 18.1/CHECKLIST OF KITCHEN AND MESS HALL EQUIPMENT

Bread rack
Butcher block
Can opener, hotel model with spare knives and gear
Coffee maker, urn
Coffee pots, 3 gal
Dishwasher with necessary tables
Doughnut cutters
Egg slicer
Fans, blower type for ranges
Fans, electric for kitchen and mess hall
Flour sifter
Food storage containers
Freezer, deep freeze
Freezer, walk-in type
French fry cutter
French fryer
Fryer, electric
Garbage cans, 10, 20, and 36 gal
Grater, 4-sided, 9 × 4 × 4 in.
Griddle, automatic
Hand truck
Hot food tables
Ice cream freezer
Ice machine with storage bin and spare parts
Ice pick
Juice extractor
Knives, butcher, 12 and 14 in.
Knives, French forged bolster, 10, 12, and 14 in.
Lamb splitter, 12 in.
Meat and bone saw
Meat slicer
Mixing spoons
Mixers, 5 and 30 qt
Muffin pan, 12 cup, 14×10×1½ in.
Oven, bake
Pans, baking
Pans, long-handled
Pans, loop-handled
Pastry tube
Pie server
Pot racks
Potato peeler
Pots, brazier, heavy aluminum, with 2 loop handles
Pots, sauce, with cover, various sizes
Proof box, 16-gauge galvanized, on casters
Ranges, fuel to suit available supply
Refrigerators, walk-in
Refrigerators, electric or gas
Refrigerator truck
Roast beef slicer
Scale, kitchen
Scale, bakers'
Scoops, sugar and flour
Sinks
Spatulas, bakers' 10 and 12 in.
Steak cuber
Steak hammer
Steel, butchers'
Stove, electric for coffee maker
Tables, cooks' work
Tables, bakers'
Tenderizer, meat, with cleaning and sharpening tools
Toasters, electric
Tongs, stainless steel utility
Trays, serving, 14×18 in. plastic
Waste baskets

SCHEDULE 18.2/CHECKLIST OF KITCHEN AND MESS HALL SUPPLIES

Aprons, cooks' and waiters'
Ash trays
Bowls, 5 and 6 in.
Bowls, grapefruit
Bowls, gravy
Bowls, serving
Brooms
Brushes, bottle
Brushes, cleaning and scrub
Caps, cooks' and waiters'
Cruets, oil and vinegar
Cups
Dishtowels
Dustpans
Foil, aluminum, 18 and 24 in.
Griddle bricks
Ice cream dishes
Ice cream scoops
Ice cream spade
Mats, door
Mats, hot
Mops, heads and handles
Mustard pots with covers
Napkins, paper, with dispensers
Platters, china, 15½×10, 13¾×8, 12×6 and 11×5½ in.
Plates, china, 10 and 8 in.
Pot lifters
Plumbers' helpers, rubber suction cups
Salt and pepper shakers
Saucers
Scouring pads
Silverware, knives, forks, spoons, soup spoons, serving spoons, steak knives, etc.
Serving dishes
Soap, bar
Soap, powder
Soup plates
Sponges
Spoons and ladles, cooking
Sugar dispensers
Syrup dispensers
Trays, celery
Uniforms, cooks' and waiters'
Vegetable bowls
Water glasses
Wooden bowls

SCHEDULE 18.3/CHECKLIST OF CAMP EQUIPMENT

Beds, single, steel
Bedsprings, single, steel
Chairs
Coffee tables (for recreation hall)
Lamps, floor and table
Mattresses, innerspring
Motion picture equipment (recreation hall)
Side tables
Upholstered chairs and sofas (recreation hall)
Wardrobes
Washing machine and laundry equipment
Writing desks

SCHEDULE 18.4/CHECKLIST OF CAMP SUPPLIES

Bathmats
Bathtowels and hand towels
Bedpads, single
Bedspreads, single
Blankets, single, woolen and cotton
Bleach (Clorox or equivalent)
Brooms
Clothesline and clothespins
Disinfectant (Lysol or equivalent)
Dust mops and supplies
Dust pans
Floor brushes
Insect spray
Lye
Mattress covers
Mops
Padlocks and extra keys
Pails
Pillows and pillowcases
Rat poison
Saniflush
Sheets, contour and plain
Soap, hand and bath
Soap, liquid
Soap, laundry, bar and powder
Toilet paper
Washcloths

Inventory: With sheets prepared in advance showing what should be on hand, frequent and accurate inventories of camp, mess hall, and commissary supplies and equipment are both economical and practical. However, when the totals to be accounted for are already on the sheets someone who is not under the camp manager's control should occasionally observe the count. Inventories of food and supplies are best controlled by perpetual inventories kept on visible-record cards (Fig. 18.2). Fresh meat and vegetables in the freezer may be inventoried, but unless freezer facilities are available, these items must be bought from day to day and are best charged to cost immediately upon purchase. Withdrawals should be made on a storeroom requisition (Fig. 18.3).

Anything charged out of stores is taken into cost at once. If physical counts are taken frequently, adjustments will usually be small so that there will be little or no distortion on the days when they are taken up in the accounts. Some camp, mess hall, and commissary reports make a daily allowance for loss and spoilage so that unless the loss exceeds the reserve thus created, the distortion caused by adjustments is eliminated.

Purchases: If purchases during the course of the job are made on purchase orders through the job office, it is usually necessary to let the disbursements follow the procedures described in Chap. 13. However, because of the large number of day-to-day purchases of milk, fresh vegetables, and fresh meat, many contractors give the camp manager a revolving fund and let him buy directly from the suppliers.

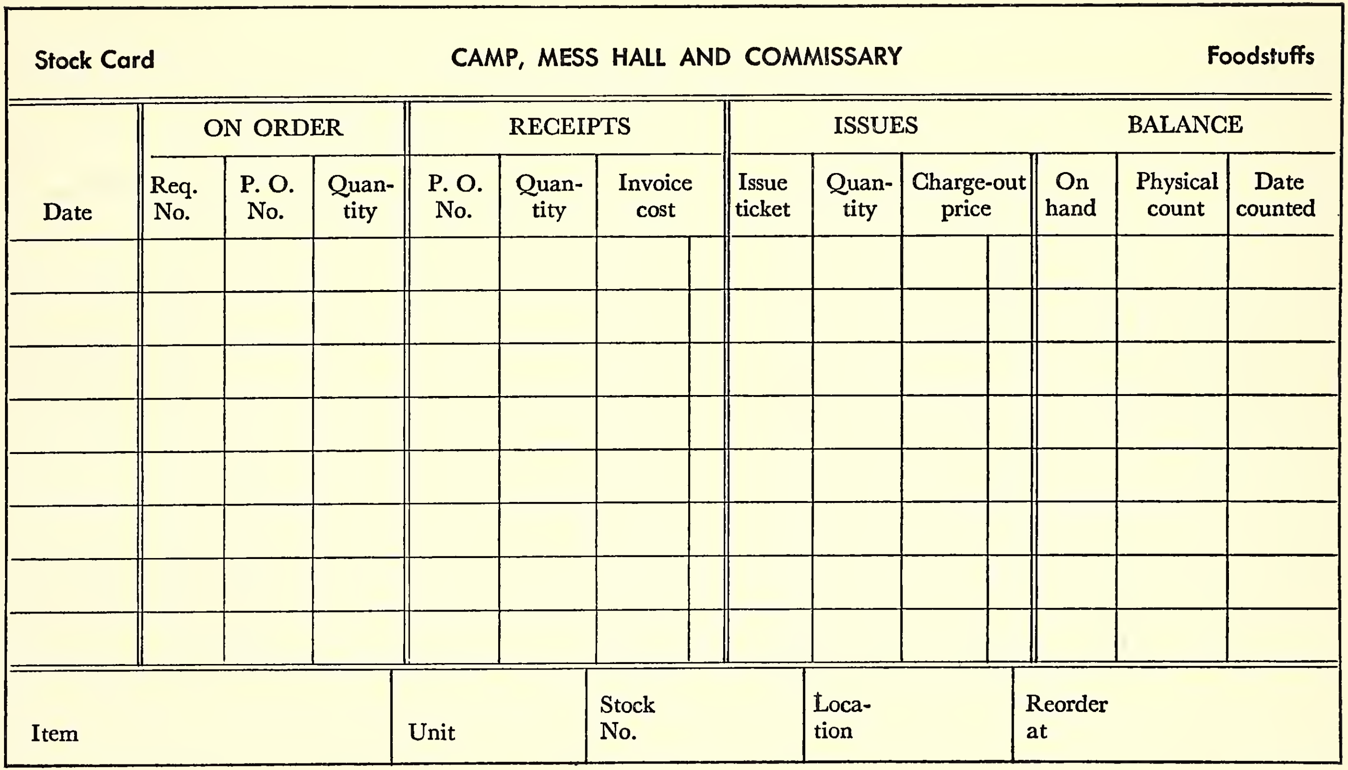
INVENTORY OF CAMP SUPPLIES AND EQUIPMENT

Sheet No. ....

Date taken..............................By..............................Mgr..............................

Items	Storeroom location	Total to account for	Location			Short	Explanation
			Storeroom	Bunkhouse	Laundry and repair		
Bedding Blankets, single, cotton	Sec. 1	100	19	40	40	1	1 burned by cigarette
" double "	"	50	10	20	20		
" single, wool	"	40	18	20	2		
Mattress covers	"	40	18	20	2		

Fig. 18.1 Camp supplies and equipment inventory



Stock Card **CAMP, MESS HALL AND COMMISSARY** **Foodstuffs**

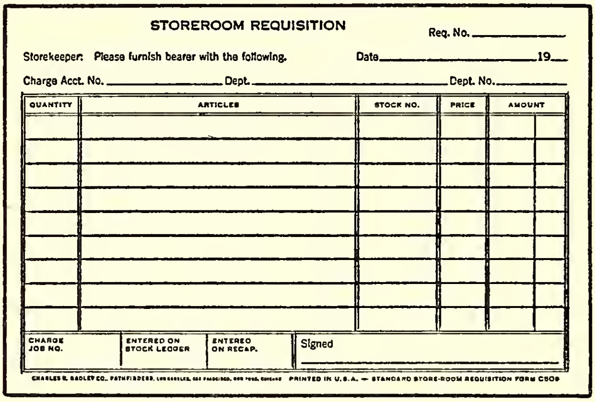
Date	ON ORDER			RECEIPTS			ISSUES			BALANCE		
	Req. No.	P. O. No.	Quantity	P. O. No.	Quantity	Invoice cost	Issue ticket	Quantity	Charge-out price	On hand	Physical count	Date counted

Item	Unit	Stock No.	Location	Reorder at

Fig. 18.2 Inventory stock card

This card is designed for use in a visible-index perpetual inventory record. Note that no effort is made to extend a value for the items on hand after each transaction. Note, too, that "charge-out price" can be so set that a margin for loss and spoilage can be included.

When this procedure is followed, there is little to be gained from using purchase orders. The control comes from delivery tickets attached to the daily report. When the bill is paid the number of the check issued to pay it is shown on the delivery ticket itself. If these day-to-day purchases are accumulated and paid monthly, then a better procedure is to issue a blanket purchase order to the suppliers for a month's supply, and to let the payments go through the regular routine for voucher disbursements.



STOREROOM REQUISITION

Req. No. ____________

Storekeeper: Please furnish bearer with the following.

Date ______________________ 19__

Charge Acct. No. ____________ Dept. ______________________ Dept. No. ________

QUANTITY	ARTICLES	STOCK NO.	PRICE	AMOUNT

CHARGE JOB NO.	ENTERED ON STOCK LEDGER	ENTERED ON RECAP.	Signed ____________

CHARLES R. HADLEY CO., PATHFINDERS, [illegible] PRINTED IN U.S.A. — STANDARD STORE-ROOM REQUISITION FORM C508

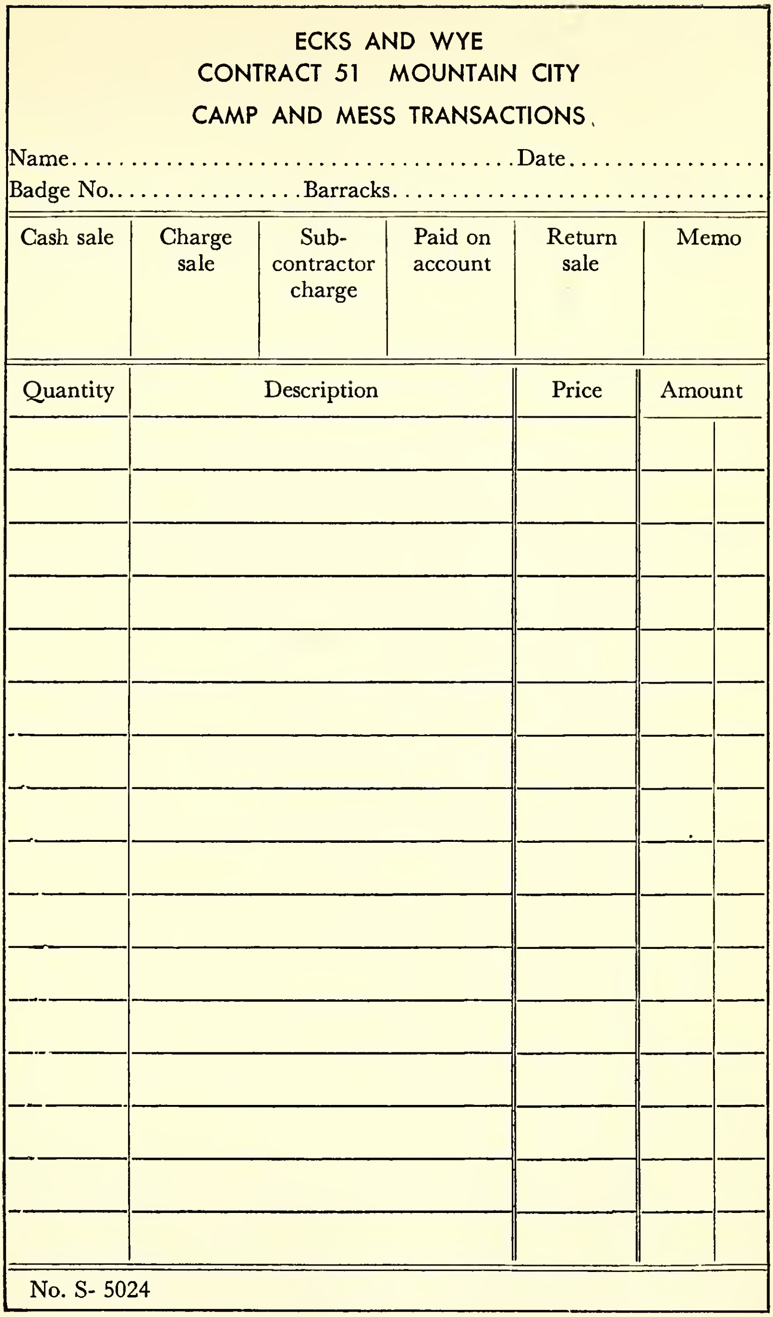
Fig. 18.3 Storeroom requisition

Income

Income from camp, mess hall, and commissary operations comes from four sources. First, and probably the largest, is from payroll deductions for meal tickets, camp accommodations, and sometimes commissary chits. Second is from over-the-counter sales or collections. Third is from meals and accommodations provided to subcontractors and others on the job. Fourth is from sales of surplus inventory.

Income from payroll deductions is controlled by the payroll department, and is initiated by various forms (Fig. 8.9, 8.10, 14.4). When a meal ticket is sold, the camp manager writes a charge slip which goes to the payroll department to support the charge. This form (Fig. 18.4) is designed for a counter billing machine.

Over-the-counter sales may be handled either by a counter biller alone, a counter biller with an attached cash drawer, or by a cash register. Of course, they can be handled through an ordinary cash



ECKS AND WYE
CONTRACT 51 MOUNTAIN CITY
CAMP AND MESS TRANSACTIONS

Name.................................... Date.................
Badge No................ Barracks...................................

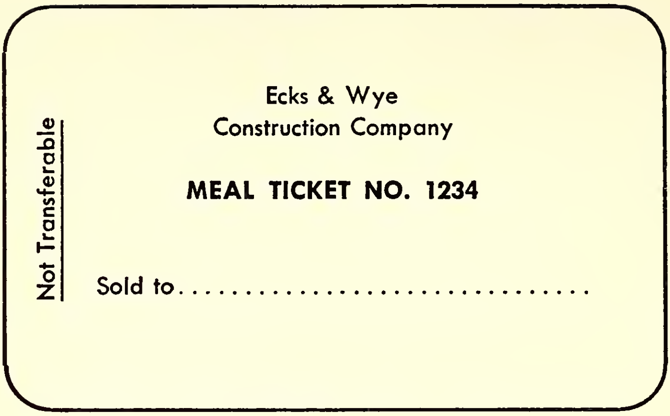
Cash sale	Charge sale	Sub-contractor charge	Paid on account	Return sale	Memo

Quantity	Description	Price	Amount	

No. S- 5024

Fig. 18.4 Charge ticket

This slip is used in the camp manager's counter billing machine.



Not Transferable

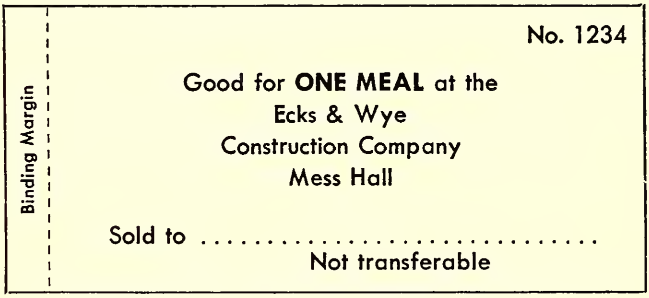
Ecks & Wye
Construction Company

MEAL TICKET NO. 1234

Sold to. . . . .

Fig. 18.5 Meal ticket

This meal ticket is good for 21 meals (one week). After it is punched out, the ticket itself is turned in for the last meal. It is wallet-sized and printed on durable card stock.



Binding Margin

No. 1234

Good for **ONE MEAL** at the
Ecks & Wye
Construction Company
Mess Hall

Sold to . . . .
Not transferable

Fig. 18.6 Meal book

This coupon is sold in books of 20. The cover is turned in for the last meal in the week.

drawer or out of the manager's pocket too, but these last two methods lack some of the more desirable control features found in the others. The counter biller form (Fig. 18.4) is designed to handle a variety of transactions, including income from the third and fourth sources mentioned above.

If there is a large, high-activity mess hall, a cash register has many advantages, particularly if some of the meals are sold for cash. One of the most useful features of a cash register is the fact that it can be used to obtain an automatic meal count, as well as a segregation of meal tickets collected (or punched), cash taken in for meals, cash taken in for meal ticket sales, and other cash taken in. However, even though a register were used in the mess hall, it would not replace the counter biller in the camp manager's office.

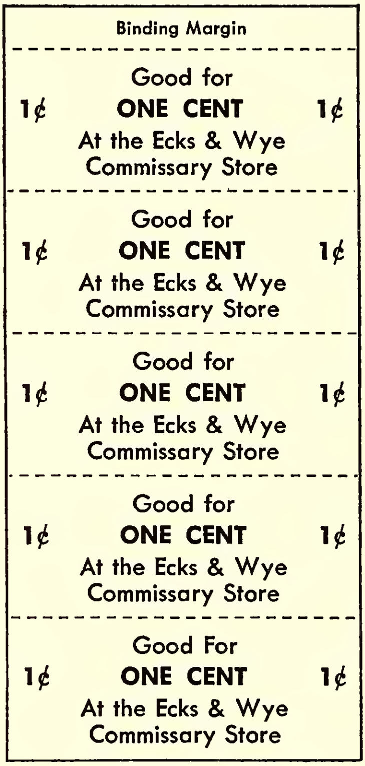
A cash register (or a counter biller with a cash drawer attached) is also useful in any commissary where a substantial number of the sales are for cash. Receipts from sales through automatic vending machines in the commissary are usually recorded as a single sale at the time the cash is removed from each machine. Commissary sales, unlike those in the camp and mess hall, should show a profit, which is controlled by the markup. Whenever the average gross profit on commissary sales falls too far or too sharply there is a good chance that all the sales are not being recorded.

One of the problems facing any company that makes a policy of charging meals, lodging, and commissary purchases to employees' accounts, is how to minimize the number of entries required. Flat daily or weekly charges for room or bunkhouse or other living quarters are usually satisfactory, but they breed dissatisfaction if applied to meals, and are entirely impractical when applied to commissary purchases. A form of meal ticket (Fig. 18.5), a meal book (Fig. 18.6), and a book of scrip (Fig. 18.7) have been used satisfactorily.

This discussion has thus far been chiefly concerned with recording the data from the operations of camp, mess hall, and commissary. The actual control of these operations through accounting lies in prompt and accurate reporting. In Chap. 16 a monthly report of camp and mess operations (Schedule 16.2) was shown and this is usually adequate for a report from a job with decentralized accounting to the head office. However, for job site control, a daily report (Fig. 18.8) from the camp manager is needed.

Note that in commissary operations, stock replenishment is treated as the cost of sales. This is done on the principle that the commissary starts out with a basic stock, and that at the end of each day the person in charge of the commissary replenishes that stock from the camp manager's general stores. If this is done daily the cost can be kept quite accurately with a minimum of work. The plant (temporary structures) write-off and the depreciation are fixed amounts which remain constant in the absence of substantial changes in the plant and equipment accounts. The treatment of such items as linen, silver, and dishes varies, but the tendency is to treat them as supplies and to spread their cost over the expected life of the job.

One of the problems on any job operating a mess hall is how to account for "free" meals to visiting executives and guests. To those job site employees (if any) who are allowed free mess hall privileges, free meals are normally treated as compensation. The number of such meals would appear as the difference between meals served and meals paid for, and if charges were to be made at "cost," they would be made at the unit cost of meals served and the amount included in "other revenue." Various forms (Fig. 18.9–18.11) are applicable.



Binding Margin

Good for
1¢ ONE CENT 1¢
At the Ecks & Wye
Commissary Store

Good for
1¢ ONE CENT 1¢
At the Ecks & Wye
Commissary Store

Good for
1¢ ONE CENT 1¢
At the Ecks & Wye
Commissary Store

Good for
1¢ ONE CENT 1¢
At the Ecks & Wye
Commissary Store

Good For
1¢ ONE CENT 1¢
At the Ecks & Wye
Commissary Store

Fig. 18.7 Scrip

Scrip for commissary purchases is often sold in books of $5 or $10.

Loss and spoilage are most easily accounted for by adding an appropriate percentage (usually from 1 to 5 per cent) to food costs reported. However, some companies prefer to set the allowance out as a separate line in the daily report.

ECKS & WYE
Contract No. 51 Mountain City
CAMP MANAGER'S DAILY REPORT Date.......

Men in Camp		**Meals Served**	
Last night	......	Breakfast	......
Arrivals	......	Lunches (mess hall)	......
*Departures	......	Lunches (put up)	......
Tonight	......	Dinners	......
* Clearance slips attached		Total meals	......

CASH RECEIPTS AND DISBURSEMENTS

Change fund on hand this morning		$........
Cash received (receipts attached)		....
Total to be accounted for		$........
Less:		
Cash disbursed — supporting documents attached	$..........	
Tomorrow's change fund	....	
Cash (over) or short	....	....
Cash accompanying this report		$........

Net sales on account — sales slips attached $........

Purchases on account — delivery memoranda attached $........

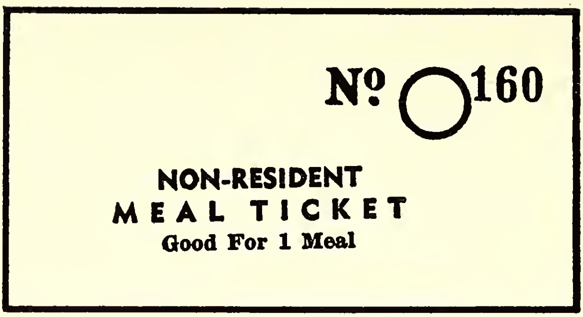
Checks written:

Payee	Purpose	Amount
....	....	$........
....	....	....
....	....	....
....	....	....

Fig. 18.8 Camp manager's daily report

Policies

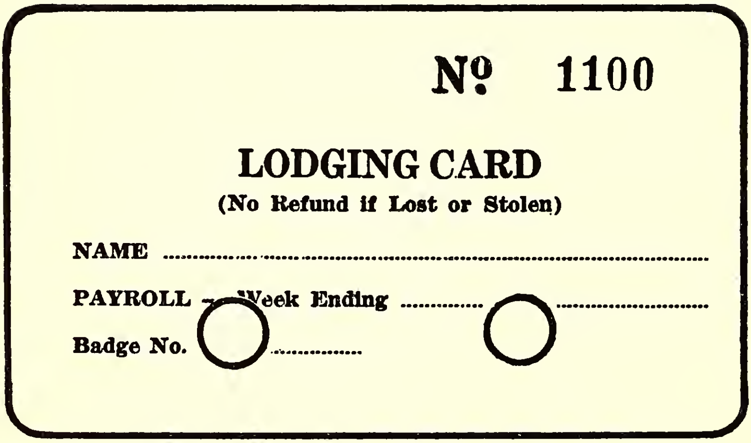
It is rarely good policy to make a profit on a camp or mess hall. The only reason for having such facilities is that the job is remote and local accommodations are inadequate. The very remoteness that creates the problem of feeding and housing employees also created the problem of hiring them in the first place. One way to get and keep capable men on remote jobs is to have good camp and mess hall facilities at minimum prices. One fairly common rule of thumb is



Nº 160

NON-RESIDENT
MEAL TICKET
Good For 1 Meal

Fig. 18.9 Nonresident meal ticket



Nº 1100

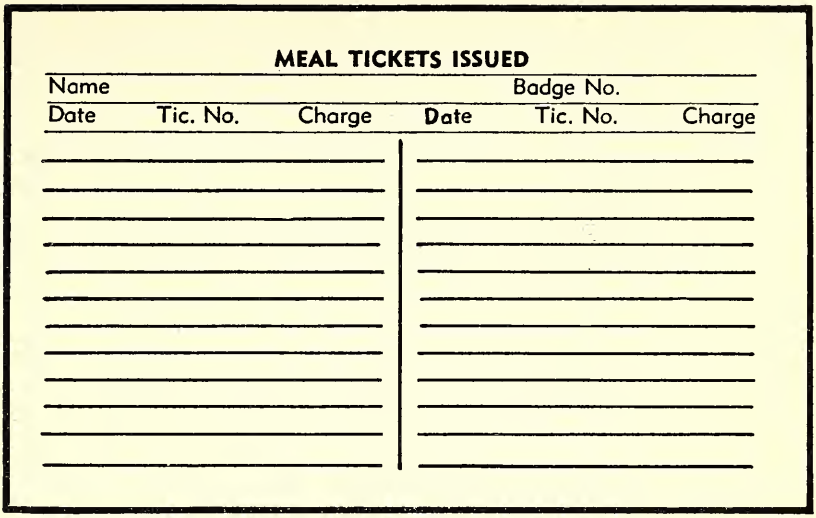
LODGING CARD
(No Refund if Lost or Stolen)

NAME ....
PAYROLL — Week Ending ....
Badge No. ....

Fig. 18.10 Lodging card

that the company should equip and stock the camp, mess hall, and commissary, and provide the temporary buildings. Thereafter, these activities should charge enough to pay their own way.

Subcontractors often wish to use the camp and mess hall facilities of the prime contractor, and a question arises as to how much they should be charged for the service. Certainly the prime contractor should not assume additional out-of-pocket losses to provide such service, but it is easy to price such facilities so high that their use by the subcontractor is not practicable. Therefore, it is a good idea for a prime contractor to take into account any savings the additional volume will make possible, and to ask the outside users to pay only for their proportionate share of fixed charges.



MEAL TICKETS ISSUED

Name Badge No.

Date	Tic. No.	Charge	Date	Tic. No.	Charge

Fig. 18.11 Summary of meal tickets issued

The net losses which normally result from operating a camp and mess hall will usually be offset, to some extent, by gains from the commissary and (when one is operated) the trailer camp. After offsetting any gains from such related sources, the net loss becomes a part of the job overhead and should be so distributed. If, as provided in some of the account classifications in Chap. 15, job overhead is distributed to the job cost accounts, the rate applied should include these losses.

Some companies try to hold down the losses on camp and mess hall operations by subcontracting them, and some even try to profit by selling the concession. Any apparent saving or gain is usually very expensive. A subcontractor or concessionaire would be forced to hold down quality, variety, and service so that he could operate at a profit, and so would tend to work against the best interests of the contractor. The result is that very few concession or subcontract arrangements for camp management operate satisfactorily from the contractor's viewpoint; they should only be considered after very careful analysis.

Sometimes an unscrupulous concessionaire will start bootlegging liquor, women, and gambling in the camp. Moral aspects aside, such practices can very quickly cut into the working efficiency of the men and thus into the contractor's profits. Moreover, once started, they are difficult to stop, even with the help of the local authorities. If any concessionaires or subcontractors are used in the camp, mess hall, or commissary, their contracts should provide for cancellation on their participation in any illegal or improper activities.

Some companies control the normal loss on camp, mess hall, and commissary by turning over the whole operation, accounting included, to the camp manager. Their approach is to start the camp manager with a basic inventory, a revolving fund, and a relatively small salary. Then they let him know that he is expected to complete the job with what he has plus the amounts collected from the men, and leave the rest strictly to him. The theory is that with the temporary structures, the basic inventory, and the revolving fund representing the amount the company expects to lose on the operation of its camp, mess hall, and commissary, a good camp manager should be able to uphold the quality of meals and accommodations; and still be able to suplement his salary by "commissions" on buying, sales of "surplus" items and similar methods. However, if he allows any substantial stealing or inefficiency, the margin within which he can operate is reduced, or the quality of the food and service goes down, and the job management can take steps to remedy the situation. In other words, he is still an employee and, as such, is easier to control than a subcontractor or a concessionaire.

Admittedly such a philosophy is hard-boiled. On the other hand, it generally gets better results than concessions or subcontracting the camp, mess hall, and commissary, and it does have the sanction of wide acceptance in the industry. Of course, if the men pay nothing for their rooms or meals, this system will not work.

A contractor whose operations require him to provide a mess hall will inevitably be faced with the proposal of raising his own beef and pork. The arrangement is risky. Usually if trouble comes in the mess hall it is better to have served only government inspected meat.

Most of the larger and better managed construction companies are finding it more profitable, if camp and mess facilities must be provided, to run them as a part of the job, and to control their operations through physical inspection and accounting.

First aid, guards, and fire protection

On most large construction jobs, first aid, guards, and the fire department are under the supervision of the job office manager or the project controller. Their cost is a part of overhead and should be distributed as such. Purchases for these activities should originate with requisitions sent to the person responsible for job purchasing, and the actual purchases should be made through the usual channels.

In controlling first aid, the person responsible needs to be aware of two possible trouble spots. First, in contracting to furnish first aid service to subcontractors and others it is possible to place the company in a position of agreeing to practice medicine, and it is possible to subject it to liability for alleged negligence on the part of its first aid personnel in handling accidents. Any such agreements should be cleared through the company's attorney. Second, job dispensaries have been known to be distributing points for narcotics on the job. Foremen should report all requests for time to visit the dispensary and repeaters should be investigated. So, also, should all dispensary purchases and deliveries.

Guards tend to become careless, and there is a possibility of collusive deals if they are in the same place too long. Therefore, guards' duties should be rotated at frequent intervals on an irregular schedule. Attempts to unionize guards and firemen should usually be vigorously resisted. First, a strike would leave the company property unprotected, and might well place the company in violation of contractual duties under its contract with the owner, and also with the insurance carriers. Second, a union guard may find himself faced with the job of physically resisting attempts by fellow union members to invade company property.

19

Insurance Problems and Job Accounting

It is the responsibility of general management to see that a construction company's operations are adequately covered by insurance and, in meeting that responsibility, management usually makes use of the services of an insurance broker. Because the broker is customarily the agent of the insured, and not of the insurance company, it is important that he be both responsible and competent.

Premiums

Once the insurance coverage is placed it is usually up to the accounting department to see that the necessary reports are made and that any claims are properly filed and documented.

Premiums on *workmen's compensation insurance* are based on payrolls. However, despite the language of some policies and some reporting forms, the base on which premiums are computed is usually not the total dollar amount of the payroll, but rather the amount arrived at by multiplying the total hours (whether straight time or overtime) by the straight time rates. For that reason many contractors now compute "gross pay" by computing total hours at straight time and adding the overtime bonus.

Other types of insurance for which premiums are usually based on payrolls include *public liability and property damage* (other than automobile), *employer's liability and occupational disease,* and *group health and accident.* A few states, like California, have a compulsory state health and accident coverage tied to their unemployment insurance laws. In these states, the coverage is automatic unless, by special permission, it is written by private insurance companies. When it is privately written, the report is usually a copy of the state unemployment insurance tax form. As for the other reports on payroll for insurance purposes, each company has its own reporting requirements, although the differences tend to be minor. In any event, complete instructions should be obtained from the contractor's insurance broker.

For accurate and timely reporting of payroll data for insurance purposes, the accrual of insurance should be made on each payroll, and the preparation of the insurance reports should be an item on the paymaster's checklist (Chap. 8).

Public liability and property damage insurance on automotive equipment is usually covered separately for each piece of equipment reported, under a blanket policy. Each piece must be reported as soon as use starts, and special provisions are made for vehicles not owned by the company, but used on company business ("nonownership" coverage).

The so-called "equipment floater" is a policy that protects the contractor from loss or damage to his equipment from a wide variety of causes including, generally, fire and storm. There are, however, certain risks (especially some marine risks) that are not covered by the general floater policy. To facilitate the preparation of equipment insurance reports, it is important that equipment records show the value, for insurance purposes, of each piece of equipment. At the beginning of the policy year a list of equipment to be covered and the value of each piece is furnished to the insurance company. Thereafter a report of changes in items covered and their values is made. With most equipment this procedure is followed monthly. With automotive equipment it is sometimes necessary to report each piece of equipment as soon as it goes into service, particularly if public liability and property damage insurance is placed on the automotive equipment at the time the floater goes into effect.

Builder's risk insurance is usually placed on individual jobs, and the only reports required are the periodic (usually monthly) statements of the value of materials stored at the job site and cost of completed work to date. Of course, any substantial amount of materials stored in a warehouse or elsewhere should have the usual fire and comprehensive coverage. If the amounts vary, a monthly report is usually required on this type of insurance.

Fidelity bonds may be set on the basis of individual employees, or they may cover any employee who occupies a given position. To cover individuals, a copy of the hiring slip on all bonded employees should go to the bonding company. To cover jobs, a periodic report showing the names of the employees covered and their positions is customarily required (usually quarterly or semiannually) by the bonding company.

Other types of insurance—such as comprehensive, fire, burglary, robbery, business records, and business continuation—are on an annual basis and only their expiration dates need to be checked.

It is a good idea to charge one person with full responsibility for all insurance matters. That person should maintain a checklist of all coverage, the due dates of reports and returns, the existence of coinsurance clauses in reporting-type policies, and similar matters. It should be his responsibility to follow up on all reports, claims, cancellations and renewals, and all retrospective and cancellation refunds. To help top management keep abreast of the insurance situation, a number of large and medium-sized firms, and some small firms, have an insurance summary included in their monthly financial statements showing all policies and their current status.

Claims

As soon as a man is injured, a complete and accurate accident report must be made to the insurance company. All companies writing workmen's compensation insurance require such reports, and check to see that they are made. Usually the questions asked by the accident report required by the insurance company will provide a checklist of all the necessary information.

It must be remembered, however, that injuries due to "gross and willful negligence" on the part of the employer are not normally covered by workmen's compensation insurance. It must also be remembered that a great many innocent details can add up to a circumstantial case of "gross and willful" negligence. For that reason, any injury that may be serious is worthy of a special report of conditions, including, if possible, pictures of the site of the accident and the surrounding area; names, addresses, and telephone numbers of witnesses; memoranda regarding safety measures in effect at the time;

and anything else that might indicate the exact cause of the accident. Compensation insurance rates tend to be in direct proportion to losses and, since workmen's compensation insurance is an essential part of job cost, a low rate of losses can result in a bidding advantage. The reverse is also true. A high accident rate can force bidding prices up and place the bidder at a severe disadvantage in a highly competitive market.

If the man injured is the employee of a subcontractor, or is merely a business visitor on the job, the prime contractor must obtain complete details in provable form. Otherwise he may find himself faced with a lawsuit months after the event, and have nothing with which to determine his liability or on which to base a defense against an accusation of negligence. Therefore, no matter who is injured at the job site, the information and evidence assembled should always be the same. If the injured person is not an employee, the accident should be reported as completely as possible to the company carrying the contractor's public liability insurance.

If job offices are maintained, it is usually the job accountant or timekeeper who makes the accident reports. If there is no job office, the foreman usually gives the rough data for any accident reports to the general office, and someone in the accounting department makes them up. Accident reports are too often looked upon as an annoying bit of clerical routine to be passed on to anyone available. Of course, if one person has responsibility for all insurance reports, he should either prepare or review the reports.

Automobile accidents must be reported on special forms provided by the insurer and in most states either the state or local police require additional reports to be made on their forms. Many states place liability on the owner of the vehicle as well as the driver if an accident is caused by negligence, and in all states the general rules of law place responsibility on an employer for acts of his employees in the course of their employment. Because of this fact, most contractors carry insurance against liability for accidents their employees may have while driving personal cars on company business. If "nonownership" coverage is carried, reports of on-duty accidents to employees should be reported as completely and carefully as those in company vehicles.

Claims against common carriers or insurance companies for shortage and damage to goods in transit are usually first made against the carrier. In companies that maintain a warehouseman, it is usually his job to see that such claims are made. In smaller companies, the losses on materials and supplies in transit are usually reported to the office by a foreman, and the claims against the carrier are made by the bookkeeper.

Claims under marine insurance policies are probably the least well understood by contractors, and any contractor undertaking waterfront work should employ an insurance broker who is well versed in marine insurance matters. Many of the rules of negligence in maritime law are the same as those applicable on land, but the tests used in applying the rules often differ substantially. It can only be stated here that such differences do exist and that they call for the services of a specialist.

Storm and fire damage is reported on an affidavit customarily referred to as a "proof of loss." As soon as possible after the storm or fire, the damage is surveyed and estimated. Sometimes settlement is made from the estimate, but it is not uncommon for the insurance company to insist that the damage be repaired and a detailed schedule of costs submitted. If this procedure is followed, it is necessary to set up a work order to cover the repairs, and charge all the repair costs to the work order. Then the charges to the work order are documented in the same way as for cost-plus-fixed-fee work. As in such work, care must be taken to see that overhead and equipment rates are adequate.

If the insurance company pays on the basis of the estimate of damage, the contractor's unit costs often form the basis for computing the total amount to be paid. Unless the unit costs contain all the applicable costs, including appropriate overhead allocations, the contractor stands to lose by their application. There is a tendency on the part of many contractor's accountants to take the attitude that, as long as the insurance company is liable for a loss, the matter is no concern of theirs. Actually, when the insurer admits liability, the accountant's work may be just beginning. The next step is to prove the amount of the loss.

Good cost records and complete records of equipment and inventories are essential to establish what has been lost and what it cost. It is true that most insurance claims are based on "present value" instead of cost. It is also true that, on the type of loss usually covered by builder's risk policies, the number of units lost and their replacement cost will be estimated by engineers. Nevertheless, when differences arise, as they frequently do, between the estimates of the insurance company's engineers and the contractor's engineers, good accounting records provide the means for reconciling them. Lacking such records, the contractor usually has to choose between an unreimbursed loss and a lawsuit that might result in further loss.

Another problem that sometimes arises on damage claims is the allocation of lump sum insurance settlements among the prime contractor and subcontractors. There is often a feeling (sometimes justified) on the part of the subcontractors, that the prime contractor is trying to profit at their expense in allocating the loss. If an overcollection has been made, it is better to refund it to the insurance company than to divide it among the prime contractor and subcontractors. There are two good reasons for this policy. First, a contractor who has established a reputation with his insurers for strictly scrupulous dealing has a better chance of getting paid on doubtful claims. Second, excessive payments secured by overstated or fraudulent claims can be recovered by the insurance company. If, under such circumstances, some part of an excessive payment had been passed on to a subcontractor, the prime contractor might find himself forced to repay the insurance company, but unable to recover from the subcontractor.

The interest of the construction accountant in insurance claims cannot end when their amount is determined. He must record the claim as an asset, list it on the income tax returns, and report it on the financial statements. Normally a claim is treated as a current account receivable from nonoperating sources. However, it may not always be so. For example, if overlapping coverage causes a dispute among the insurers over who must pay, collection may be delayed for many months. Or the insurance company may deny liability or try to reduce the amount of the claim because of a coinsurance provision. Collection of a claim under such circumstances may require litigation, and the claim could not be properly treated as a current asset, either on financial statements or in working capital forecasts. If the insurer denies liability, the most conservative balance sheet treatment is to show the claim as an asset, reduced by a reserve for loss that is equal in amount. Normally such losses should be claimed as income tax deductions in the year in which they occur, and any recovery in a subsequent year should be treated as income in that year.

Accounting for insurance costs

Whenever an insurance policy is issued, there should be a covering invoice from the broker. The amount on the invoice should agree with the premium information on the policy itself, or on the endorsement, as the case may be. When the invoice is found to be correct, it should be so marked and sent through to be vouchered and entered in the insurance register. For most contractors the standard columnar insurance register, in which the premium is spread over the life of the policy, is adequate. Credit memoranda for subsequent cancellations can be entered on a separate line when they come in. Each entry would, of course, be identified by policy number.

Workmen's compensation premiums would not normally be recorded through the insurance register, but through the payroll vouchers. The deposit that is normally required is applied against the last payment due for the policy year, and the deposit for the new policy would be charged to the "Deposits" account.

Each year, after losses for the preceding year have been determined, a number of the insurance companies make refunds on premiums collected from each company whose losses are below an agreed percentage of the premiums paid. These "retrospective" refunds should, theoretically, be credited back to the cost of compensation insurance and such treatment is sometimes possible. Usually, however, by the time the retrospective refund is paid, the year to which it relates is long since closed. For that reason it is often better and simpler to treat the retrospective refunds as either a reduction in the cost of the company's current accident prevention activities or merely as miscellaneous income.

Subcontractors' insurance certificates

Most subcontracts require that the subcontractor carry certain basic insurance, such as public liability, property damage, and workmen's compensation. To assure the prime contractor that such insurance is, in fact, in force, the subcontractor secures from his insurers either copies of the policies, or certificates that the policies are in force, or both. The prime contractor should make sure that the certificates of insurance contain the provision that the prime contractor will be given notice before the policy is canceled or allowed to terminate for any reason.

In establishing the requirements for subcontractors' insurance, the possible complications from overlapping coverage must be considered. If any possibility exists of dispute over which insurer has the primary liability, that question should be recognized and settled before there is any claim. Usually, compensation insurance would be required by law, and public liability and property damage would apply primarily to accidents caused by the subcontractor's employees. If builder's risk is desired, it might well be carried by the prime contractor, with resulting adjustment of the subcontract prices.

Most subcontracts contain a so-called "hold-harmless" clause under which the subcontractor assumes responsibility for any loss or damage caused by his operations. If the size of the operation warrants, this clause can be reinforced by insurance certificates, and on larger operations a control file may be maintained to see that all necessary subcontractor coverage is maintained. However, if a prime contractor wants to protect himself fully, his subcontract forms should stipulate all required insurance coverages and provide that, if they are not maintained by the subcontractor, the prime contractor has the privilege of purchasing the required coverage at the subcontractor's expense.

If the subcontract contains such a clause, it should be simple to decide what to do when a subcontractor's insurance is canceled. Often, however, it is not simple, because a subcontractor whose insurance has lapsed has probably exhausted his credit with the prime contractor, and may have built up liens or potential liens far beyond his capacity to pay and far in excess of his retained percentage. Insurance premiums are not the sort of expense normally covered by a payment bond, even if the subcontractor is bonded (and frequently he is not). The prime contractor can usually bring a defaulting subcontractor's risks under the coverage of his own insurance by taking over the work. Then, if the subcontract is relet, the risks can again be shifted to the insurers of any new subcontractor who takes over from the old one.

Some question may arise about the protection of the subcontractor against the risks which the prime contractor should cover. Usually the subcontractor's own casualty coverage will hedge the most important risks. However, if the question is one that might, under the circumstances, become important, it should be covered in the provisions of the subcontract document and an attempt should be made to include it in the risks covered by the payment bond.

20

Forms and Printing in Job Accounting and Reporting

It has been pointed out (Chap. 3) that the very small construction companies rarely find it economically feasible to use decentralized accounting and, in fact, the smaller the concern the less likely it is to have problems with forms or printing. Usually the standard forms that can be purchased from commercial printers are adequate. However, as a construction business grows larger, and starts to design its own forms, some problems do arise. Some of these problems are created by decentralized accounting.

Decentralized system

It is usual for a decentralized office to have separate payroll and general bank accounts. If these accounts are kept in the same bank with other accounts of the same contractor, the checks should be a different size or color or both to prevent charges to the wrong accounts. Sometimes, particularly if the job is some distance from the general office, a bank near the job site will be used, especially for payroll. In either event, it will be necessary to have special checks printed for the job, and special printing usually takes from one to three weeks. Meanwhile, as soon as a contract is awarded there is immediate activity, and checks, as well as all other forms, are needed at once.

One of the simplest solutions to this problem is to have a standard form for voucher checks and a standard form for paychecks. A supply can then be printed up without a bank designation and with a number series (say in the 900,000 series) that will be distinctive. All banks have their own check stickers that can be put on the special series checks until the regular forms can be printed. In that way payments can start immediately from the proper bank accounts. The same special checks may be used at the end of a job if the estimated number of regular checks proves too small and the job runs out of checks so near to the end that a second run would be too expensive. They may also be used if some of the regular paychecks are stolen and it becomes necessary to change banks in the middle of a job. When the checks are designed, space can be left above and below the company name so that the name of a joint venture partner could be stamped in should it become necessary to use such checks for a joint venture.

Checks should be so designed that if the flap of an ordinary mailing envelope is clipped over the top of the check, the name of the payee will still be visible. This tends to prevent the kind of defalcations that occur when a dishonest voucher clerk manages to slip a check through the authorized signers without a payee. On voucher checks this safeguard can easily be effected by having the voucher at the top and the check on the bottom.

When a job is completed and the bank accounts are closed out, all the extra checks applicable to those accounts should be destroyed. Omitting this precaution is an open invitation to theft of the check forms and forgery. Needless to say, the special checks should be kept under lock and key for the same reason, and all numbers issued should be accounted for strictly.

Letterheads and return addresses on envelopes need not cause much concern. It is usually possible, as soon as a job starts, to secure a quick "overprint" job on enough letterheads and envelopes to start work, or a rubber stamp can usually serve until the regular supply is ready. It is often practical to have a supply of stock without the specific job address, which can then be stamped or typed in. However, the simplest solution is to have some regular letterheads with the following words printed in red at the top:

ADDRESS REPLY TO: ——

The job address can then be inserted in the blank space until the job letterheads are available.

Purchase orders usually show the job number and location and contain a space for delivery instructions (Ship to—— at——) and billing instructions. Still, if the job is large enough to warrant decentralized purchasing and a large volume of work is going through the purchasing office, it is practical to have this information printed on the form instead of having to write or type it in on each order. Therefore, as with the checks, it saves time and money to have a supply of the write-in type of form with a distinctive number series to fill in at the start of a job until the regular printing can be completed.

Work orders, statement forms, reports, requisitions, vouchers, receiving reports, personnel and payroll forms, and most other forms are usually made up to show the job number and designation and usually can be taken directly from stock. If the job is being done by a joint venture, and it is necessary to have the joint venture name on the forms, it can usually be inserted with a rubber stamp until the regular printing is received.

Other considerations

It is ordinarily most economical to use stock forms whenever they will fit the needs of the business. The forms that cannot be bought from the stock of the contractor's regular printer or stationer must be specially printed, and it is usually good business to select one responsible firm and let that firm handle all the printing of such forms and stationery. However, occasions arise, particularly if large projects are undertaken some distance from the general office, when it is good business to have as much as possible of the special printing for that job done locally. In smaller towns job printing is often done in the shop of the local newspaper, and it is common for a contractor to find that he needs the support of the local press when his operations cause complaints from the local citizens. If conditions indicate that such a situation might arise, a few extra dollars spent on locally printed forms might prove invaluable in terms of public relations.

Another matter that should be considered, in ordering printing and designing forms, is the time needed for preparation. In a decentralized job the need for such design is multiplied by the lack of the usual general office controls. Thus, snap-out forms cost more initially, but that cost must be weighed against the time required to interleaf the carbon paper and line up the forms at the time they are being prepared. The use of single-use carbon paper in snap-out forms avoids the errors and delays inherent in failure to use new enough carbon to produce legible copies. If forms are to be used by foremen, superintendents, or warehousemen, they will be more promptly filled out and submitted if they are designed to be executed in pencil rather than by typewriter. If several copies of such forms are required, it may be cheaper to reproduce them on one of the numerous photographic duplicators than to try to produce enough copies with carbon paper. Of course, if the forms can be typed, it is possible to produce as many copies as desired by using a duplicating process.

Centralized system

If the office work on all jobs is centralized in the head office, it is possible to centralize the printing of forms and to realize the economy of volume buying from a single reputable source. As one of the printer's better customers, it is easier for a contractor to get prompt delivery dates and occasional "rush job" service. Unless the operation is very small, snap-out check and voucher forms can save a great deal of employee time in the office, and can be bought at reasonable prices in volume. It is quite simple, as a rule, to find forms of this kind that are entirely adequate and that can be bought from stock.

If all banking is done at a single bank, it is simple enough to get voucher check and paycheck forms to fit a wide variety of needs. Both shape and color can be used to distinguish checks on the various accounts from each other and, if volume warrants it, the checks can be punched for mechanical sorting.

If separate bank accounts are kept for each job in a centralized system it is advisable to have them at separate banks. However, if a number of accounts must be kept in a single bank, it is almost imperative to use various sizes, shapes, and colors of checks to prevent intermingling of the accounts.

Purchasing forms in a centralized purchasing system can be the snap-out type and still have a maximum of shipping and billing information printed on the form. With a properly designed form and an electric typewriter it is possible to get ten or more copies without duplicating. Moreover, all billing instructions can be uniform, so that additional time is saved in prompting suppliers to provide billings in the right form and number of copies.

If purchasing is decentralized it is sometimes more economical, particularly if the purchasing is done from the job site, to use a single-copy padded purchase order designed to be handwritten and duplicated.

Offset printing will be most economical for this type of form and it will be just as useful as if a more costly process were used. Of course, offset is useful on many other types of forms as well, but this application is typical.

Mixed system

If a system is partly centralized and partly decentralized, the safest and most economical procedure, in the long run, is to treat it as a decentralized system for the purpose of designing and printing forms. However, with a little additional planning it is usually possible to obtain the advantages of centralized buying.

21

Effect of Personnel Policies on Job Accounting and Reporting

Employees whose jobs are unionized must normally be governed, in their relationships with their employer, by union rules and by the laws governing unions. Except for the limited effect of the federal wage and hour law and the various state laws, nonunion employees are governed by company personnel policies. This chapter is principally concerned with the nonunion group.

Schedule 21.1 is a statement of personnel policies established by a construction company of medium size. This statement became a part of the company's procedure manual. The significance of these policies in terms of financial and accounting control is, to a large extent, self-explanatory. It is the duty of the accounting department to recognize, in each policy, the financial and accounting requirements involved, and to make preparations to fulfill those requirements. For example, if the expense account policy is to be adhered to, the procedures followed by the voucher clerk must be so designed that no unauthorized expense voucher will be paid, and those that are properly authorized will be processed and paid without delay. Similar requirements could be cited for each of the illustrative personnel policies in Schedule 21.1.

SCHEDULE 21.1/MEDIUM-SIZED CONTRACTOR'S PERSONNEL POLICIES

General policies

All employees will be classified for the purposes of establishing policies and creating incentives. The classifications will be as follows:

E—Executive
A—Administrative
O—Operational

The executive group includes top management, department heads, and such other key personnel as top management may wish to classify in this group.

The administrative group consists of those employees who, regardless of their duties, are considered permanent employees, as distinguished from those hired on a job-to-job basis.

The operational group includes all employees not otherwise classified.

To the extent practicable, advancements to the "E" classification will be made from employees in the "A" classification, and advancements to the "A" classification will be made from the "O" group.

Hiring procedures—nonunion employees

It is the policy of the company to make promotions from within the organization whenever possible. Accordingly, whenever trainees or others are brought in from the outside they will normally be placed in the operational group. Jobs in the administrative group will first be offered to qualified employees in the "O" group, and only if none can be found will outside applicants be considered. When an employee is brought into the "A" group he is covered by a blanket position bond. He will be required to fill out an application blank.

When an employee is needed in the "A" group and there is no qualified person already employed to fill the position, the first reference will be to files of former employees who have requested re-employment. If none is found there, the general application files will be searched and only after these have failed to produce the desired result will recourse be had to such sources as advertisements, employment agencies, and so on.

Occasionally top management may decide to offer a position in the "A" or "E" group to someone outside the company. Such a step will first be thoroughly discussed by top management among themselves and with the employees who might otherwise have been considered for the job the newcomer is to fill.

If an application is received by mail and there appears to be a reasonable chance that someone of the type indicated by the application may be needed, either immediately or in the foreseeable future, one of the company's regular application blanks should be sent with a request that it be completed for early consideration. If the application cannot be considered at once, a postcard should be sent to the applicant bearing the following message:

"This will acknowledge receipt of your inquiry regarding employment with our company. At present we have no opening available requiring experience and qualifications such as you have stated. We will, however, keep your application on file and if anything develops in which we feel you will be interested we will be pleased to contact you. Ecks & Wye Co., 000 Hoe St. Los Angeles 17, MUdbank 1-2345."

When an individual is interviewed for a position, he should be notified as soon as the position is filled even though he may not be selected.

Grievance procedure

One of the most important psychological factors in any business organization is employee morale, and one of the best ways to keep morale good is to establish among the employees the feeling that grievances will be fully heard and fairly dealt with. Most employees are reluctant to take a grievance directly to a department head. Therefore, in each department some senior employee should be designated to bring employee grievances to the department head. In listening to, and acting upon such grievances, the department head must remember that upon his fairness and good judgment depend the morale of the people upon whom his own job, in a large measure, depends.

It is the policy of the company to encourage employees to bring their personal problems to the attention of their department head, since we do not have a personnel counselor. The reason for this policy is to discover, and take action to remedy, the problems that disturb the employees and keep their minds from their jobs. It is expected that this policy, if effectively carried out, will create a closer and more personalized relationship between the department heads and their employees.

Absenteeism

It is the responsibility of each department head to eliminate tardiness, leaving the job early, and absence for any but legitimate causes. See policy on time off.

Sick leave

Sick leave, as the term implies, is to be used only when sickness of the employee himself, or of his immediate family, prevent attendance. It is not a form of vacation to be taken as a matter of right.

SCHEDULE 21.1/CONTRACTOR'S PERSONNEL POLICIES (Cont.)

"E" employees: Employees in the "E" classification may accumulate sick leave at the rate of one day per month up to a maximum of 25 working days. Any sick leave in excess of that accumulated must be specifically approved by top management.

"A" employees: Employees in the "A" classification may accumulate sick leave at the rate of one day per month up to a maximum of 15 working days. At the discretion of his department head an employee in this group may receive as much as 5 additional working days. Any additional sick leave for an employee in the "A" classification must be approved by top management.

"O" employees: As a matter of policy, employees in the "O" classification are not entitled to sick leave. Virtually all such employees will be paid on an hourly basis and will be paid for time in attendance only. An exception to this general rule occurs when an "O" employee is paid on a straight salary and has not been paid for overtime. Under such circumstances the department head or project manager may authorize up to one week of sick leave. Any allowance in excess of one week must be on instructions from top management.

Joint ventures: Employees of this company who are employed on a joint venture job shall be subject to whatever sick leave rules are laid down by the sponsor. However, if those rules result in treatment less favorable than the employee would have received had he been employed on a company job, the company will make up the difference.

Computation and record keeping: A record of accumulated sick leave will be maintained in the general office for all "E" and "A" employees. This will require that any sick leave taken by employees assigned to jobs in the field be reported to the general office.

Once an employee has accumulated the maximum sick leave, no further time will accumulate. However, when such an employee returns to work after taking sick leave, accumulations will start in the following month and continue until the maximum is again reached.

Vacation policy

It is the general policy of the company that all salaried employees having twelve months or more of continuous service shall receive two weeks paid vacation each calendar year. Except as noted below, such vacations must be taken in one continuous period and may not be carried over in whole or in part into a subsequent calendar year. Also, subject to the exceptions noted below, it is not the policy of the company to pay for vacation time not taken during the calendar year.

Salaried employees on construction projects: Salaried employees in job offices will normally take their vacations at the conclusion of a job. Occasion-

SCHEDULE 21.1/CONTRACTOR'S PERSONNEL POLICIES (Cont.)

ally a salaried employee on a construction project may be needed continuously during one calendar year in which event, with the written authorization of the department head, a carry-over into the next calendar year will be permitted with a maximum accumulation of four weeks to be taken at the earliest opportunity. If, for company reasons, some part of such an accumulation cannot be taken, payment may be made for the time, provided written permission from the department head is obtained.

New employees' vacations: If, during the first calendar year of employment, an employee has less than six months' continuous service, he shall receive no vacation in that calendar year, and shall not be eligible for his first two-week vacation until completion of twelve months' service.

If, during the first calendar year of employment, an employee has more than six months' but less than twelve months' service, he shall receive a vacation of one week to be taken within the calendar year.

Effect of terminations on vacations: Employees who are qualified for a vacation and who voluntarily leave the employ of the company before taking it, shall be entitled to such vacation provided they are in good standing and give the company adequate notice of their intention to resign. Vacation time will not be considered in determining the period of notice.

Management reserves the right to determine to what extent, if any, vacation allowances will be granted to those whose services are terminated under other conditions.

Holidays during vacation: A legal holiday falling within an employee's vacation period will have the effect of extending the vacation by one day.

Vacations with leave of absence: An employee going on leave of absence and otherwise eligible for a vacation shall be granted the vacation prior to the leave. Should a vacation be taken immediately prior to a leave of absence, such leave of absence shall be considered to begin on the day following the last day of vacation.

Exceptions to vacation policy: It is recognized that under exceptional circumstances some deviation from the established policy may be justified because of company necessity or some equally compelling reason. Under such conditions there may be a deviation from the foregoing, provided that such deviation is authorized by top management.

Salary adjustment and pay schedules

Compensation of employees in the "E" classification will be set by top management.

Compensation of employees in the "A" classification will be set in accordance with a predetermined salary schedule showing rate ranges. This schedule will be reviewed in June of each year. The construction manager and the controller will review the rate ranges for jobs in their respective departments and make any recommendations they see fit to the general manager. The schedule will not be changed without specific authorization from the general manager.

Adjustments of compensation of employees in the "A" classification will arise in two ways: (1) by upgrading or downgrading, (2) by a semiannual review of each employee's record.

During the month preceding the anniversary date of each employee's service with the company, and at the six months' point, each department head will review each employee's record for the preceding year. This review will take into account such factors as quantity and quality of work, attitude, initiative, resourcefulness, length of service, potential capacity for progress, relationship of present salary to going rates for comparable jobs both within and outside the company, and any other factors that may be material.

On the basis of this review, the department heads will make recommendations for pay adjustments to the general manager. Any adjustments approved by the general manager will be put into effect for the first pay period beginning after the anniversary or midyear date of the employees affected.

Adjustments due to upgrading or downgrading will be effective on the date of the change in grade.

Employees in the "O" classification will normally be paid according to established hourly rates. If, on occasion, such employees are paid on a weekly or semimonthly basis, their salaries shall be set by applying the applicable hourly rate to the established work week. Semimonthly rates, in such cases, would be computed on the basis of four and one-third weeks per month.

Any adjustment in compensation of employees in this group will normally reflect changes in going rates for such employees or equalize inequities between jobs. However, if, in the opinion of the department head, variations in the going rates are justified, the department head has discretionary power to allow such variations up to 10 per cent of the going rate.

Overtime

Only employees in the "O" classification shall be paid for overtime and then only if called for by an applicable union agreement, and the rate will then be that established by the union agreement.

The effect of the wage and hour law on new construction may be summarized as follows:

In applying the provisions of the wage and hour law to the building and construction industry, the administrator and the courts have held that original construction of buildings, unless they are to be used in interstate commerce or the production of goods therefore, is considered intrastate commerce and therefore outside the scope of the act.

The repair or reconstruction of existing buildings or instrumentalities of interstate commerce, however, is subject to the act even if a new structure or facility is merely an addition to a pre-existing structure or facility.

If any repair or reconstruction work is undertaken, a special determination of the effect of the wage and hour law will be necessary.

One exception to the foregoing policy is the case of women employed in the general office for Saturday work. These employees will be paid one and one-half times their regular hourly rate computed on the basis of four and one-third weeks of 40 hours each month.

Bonuses

Bonuses have been discontinued as a matter of company policy except where necessary to honor previous commitments. It is now the company's policy to pay all compensation in the form of salary. For the policy on gifts at Christmas, see the section on employee benefits.

Time off

Occasions will arise when an employee, for legitimate personal reasons, may need to be absent during regular working hours. On such occasions, it is within the discretion of the department head to grant reasonable time off without penalty. However, it is also within the discretion of the department head to charge such time off to any vacation which may be due to the employee or, in extreme cases, to charge the time against the employee's current salary.

Normally this problem will only arise in connection with employees in the "A" group or with those in the "O" group who are paid on a weekly or semimonthly basis.

Jury duty

If employees are called for jury duty, it will be the company's policy to have them excused if possible. If all such efforts fail and an employee is forced to serve on a jury, the employee will be paid an amount equal to his usual salary reduced by his jury fees for the usual 30-day term. In the event an employee, while serving a term of jury duty, is selected for a long trial that will run over the 30-day term, the employee's department head will consult with the general manager to determine the policy to be followed for the excess period of service.

Rest periods

There will be no regularly scheduled rest periods. At the discretion of each department head, employees may be permitted such time as may be reason-

SCHEDULE 21.1/CONTRACTOR'S PERSONNEL POLICIES (Cont.)

able for an occasional cup of coffee at a coffee vending machine, or for similar interim relaxation as may be justified by the nature of the work. However, such rest periods as the department head may sanction are a matter of privilege, and not a matter of right. Abuse will justify their withdrawal either on an individual or departmental basis.

Employee benefits

At present, a group health and accident insurance policy is in effect. Premiums are deducted from the employees' paychecks. The company handles the accounting work and the remittances.

During the last week of November each year, the general manager with such assistance from the department heads as he may require, will select an appropriate gift (such as a turkey or a box of fruit) to be given to all employees in the "E" and "A" classifications and to any "O" group employees to whom such gifts may be in order.

Future consideration is to be given, as conditions warrant, to such further benefits as: A pension- or profit-sharing trust; group life insurance; employee activities such as picnics, parties, or a company magazine.

Policies for their administration will be established when and if such benefits are inaugurated.

Ideas

It is the policy of the company to stimulate and reward constructive thinking on the part of all employees. It is one of the duties of supervisory employees to encourage the people under their supervision to come to them with ideas, and to assist in the development of any of those ideas that appear practical. Due credit will be given any employee for useful ideas, but the greatest credit, and the most substantial recognition, will be given to those supervisory employees who are most successful in stimulating thought.

Holidays

The general office will be closed on the following holidays:
New Year's Day (office closes at noon December 31)
Independence Day
Labor Day
Veterans' Day
Thanksgiving Day
Christmas (office closes at noon December 24)

Should any of these holidays fall on Sunday, the following Monday will be a holiday.

SCHEDULE 21.1/CONTRACTOR'S PERSONNEL POLICIES (Cont.)

Office hours

The general office will open at 8:15 A.M. and close at 5:00 P.M. Monday through Friday each week and there will be a 45-minute lunch period. All employees, including executives, are expected to observe these hours.

Contributions

The company belongs to a group known at A-I-D (Associated In-Group Donors). Once each year you will be asked to contribute to that group. There will be no other solicitations during the year, and all requests will be referred to A-I-D. Internal solicitation (passing the hat) must be cleared through the office manager who will also have a budget for company contributions to such funds.

Memberships

The company encourages membership in professional societies and in suitable circumstances, to be determined by the general manager, will pay all or part of the dues of an employee active in such societies. Each of the employees in the "E" classification is encouraged to belong to a service club such as Rotary, Lions, Kiwanis, Optimists, or Exchange Club. Dues will be paid by the company. Reasonable allowances of time will be made for organization activities. In engaging in such activities, employees are expected to remember that they are representing the company, and that by promoting its interest at every opportunity they are thereby promoting their own.

Expense accounts

All employees who incur expense on behalf of the company are entitled to reimbursement upon submitting to the controller a properly authorized expense account. To be properly authorized, an expense account must meet the following tests:

Employees in the "E" Classification: Expense accounts need not be authorized in advance but they must be authorized for payment by the general manager. Since employees in this group are supplied with company cars and credit cards, only such company car expense as cannot be placed on the credit card without undue inconvenience will appear on the expense account. Hotel, Diners Club, railway, airline, and telephone credit cards are also furnished to employees in the "E" classification, and are to be used in lieu of cash if possible. In keeping with the standing of the company, it is expected that employees in the "E" classification will travel in first-class accommodations and will stay at first-class hotels.

Cash spent for entertainment of guests will be reimbursed without supporting vouchers. However, it will be necessary for the expense account to show the names of the persons entertained, their business connection, and the date and place of entertainment. The cost of entertaining public officials or public employees is not deductible for income tax purposes.

Tips, cab fare, postage, parking, local telephone calls, and similar costs should be identified and not aggregated into a single item called "miscellaneous." All purchases that cannot be charged to the company should, if possible, be supported by receipted bills or invoices.

Travel advances will be charged against the individual and, if not covered by expense account within a reasonable time, will be collected from the employee. Expense accounts are due on or before the fifth of each month for the preceding month, and expense accounts rendered after that date may be disallowed in whole or in part.

Employees in "A" and "O" Classification: Employees in the "A" and "O" classifications who are called upon to travel regularly are subject to the same rules as employees in the "E" classification, except that air and rail travel will be tourist class where possible. Hotel accommodations will be in tourist class hotels. Employees in the "A" and "O" classifications will not ordinarily be authorized to spend money for entertainment. When such expenditures are made, they will be subject to very close scrutiny.

Usually, any travel expense incurred by employees in the "A" or "O" classifications must be authorized in advance by the head or assistant head of the department in which the employee works. When the expense account is turned in by the employee, it is the department head or his assistant who must approve the expense account for payment.

Discipline

Normally, the maintenance of discipline in each department is the responsibility of the department head. However, it must be remembered that the company has a substantial investment in each employee and indiscriminate firing can be costly. Any borderline cases should be discussed with the general manager.

Garnishments, attachments, and assignments

The company is legally bound to honor any garnishments, attachments, or assignments of an employee's wages or salary. We should, nevertheless, make every legitimate effort, without subjecting ourselves to liability, to protect the employees against such legal levies. There are three reasons for this policy. First, we gain more from securing the loyalty of our own employees than we do from the reputation among loan companies and credit retailers as a "cooperative" employer. Second, an employee who can expect nothing on payday but more attachments and garnishments is rarely a good employee,

SCHEDULE 21.1/CONTRACTOR'S PERSONNEL POLICIES (Cont.)

and sometimes the pressure of debts will turn him into a dishonest one. Third, every payroll deduction or split check increases the cost of operating the payroll department, and to the extent that these special problems can be held to a minimum, so also, can the costs.

Therefore, if it should become necessary to fire the employee, a record of having done everything reasonably possible to protect him tends to justify the result in the minds of the other employees. Also, it frequently happens that the employee is being victimized by a racket, and when a dishonest creditor feels he is up against the employer as well as the employee, he frequently abandons his efforts.

When faced with a difficult garnishment problem, the paymaster should consult the head of the employee's department. If the department head feels the employee is valuable enough to the organization to make it worth while, he may consult the company's attorneys on ways to assist the employee in controlling the collection efforts of his creditors.

Group insurance

The company has made available to its salaried employees an employee-financed group health and accident insurance policy. This group policy was selected only after a careful survey of all available policies to secure the best coverage. Every employee should have an opportunity to participate. It is not company policy to exert pressure of any kind on any employee to take part in any insurance plan. At this time, a number of group life programs are under study and, as soon as the most suitable is selected, it will be presented to the employees for their consideration.

Joint venture service

Often an employee of this company in the "A" or "O" classifications will be transferred to the payroll of a joint venture. When this company sponsors the venture, there will be no problems of seniority, vacation, insurance, expense accounts, moving expenses, and similar matters, because joint venture policies will conform to company policies. However, if the joint venture is sponsored by one of the other joint venturers, then the employee will be treated in accordance with joint venture policy. If any joint venture personnel policy is less favorable to the employee than that of this company, an equitable adjustment will be made by this company. This policy does not include working hours, however. Any requirement of the joint venture regarding working hours will be binding on the employee without adjustment.

Lending employees to others

It is contrary to the policy of this company to "lend" its employees to others or to "borrow" the employees of others for its own work. If, with

SCHEDULE 21.1/CONTRACTOR'S PERSONNEL POLICIES (Cont.)

company permission, an employee performs services under the direction and control of another person or firm, it will be company policy to insist that he be placed on the payroll of such other person or firm. Aside from the business aspects of this policy, workmen's compensation insurance and industrial accident considerations made it imperative.

Likewise, employees of subcontractors, or other outside employees should never, under any circumstances, be placed on the payroll, unless the company is prepared to take full responsibility for their work and conduct.

Job site personnel responsibility

It has been pointed out elsewhere in this volume that full control over job site personnel must be in the hands of the man in charge of the job. If the man in charge is "accounting-minded" this control creates no real problem. In fact, if jobs are large enough to warrant a field office, it is possible to place on the job an office manager or project controller who can take a great deal of the administrative burden from the project manager or superintendent. It is often entirely possible to give the office manager control, under the project manager, of employees in the accounting, office clerical, payroll, timekeeping, cost, warehouse, purchasing, camp, mess hall, first aid, safety, security, guard, and fire protection departments. Any fully qualified construction office manager should have experience in handling all these activities on a large job. The combination of a strong office manager and an accounting-minded project manager make a profitable team that can operate autonomously without any direct line of functional control from the general office to the job accountant.

If the project manager is inclined, as many are, to look upon the job office manager as a "mere clerk," or if the job office manager is a "mere clerk" in fact, some direct control by the head office of the job office is necessary. This control usually is most effective when exercised by the company controller or a field auditor who is an experienced job office manager in his own right. To make split control work at all, the head office representative must have the authority to require, even over the project manager's objection, that the actual accounting be done according to his instructions. The head office representative must thus have the complete confidence and backing of top management. If these cannot be obtained, it is better to centralize the accounting.

Accounting reports

Decentralized job accounting leaves the head office largely dependent upon the job accounting reports for much of its management information. Placing responsibility for such reports is an important personnel decision, and upon it may depend the success of the job. The responsibility for correct accounting principles must lie essentially with the head office and its accounting manual. Applying those principles on the job must be the responsibility of the job accountant or, in a split control system, of his functional supervisor in the head office. Responsibility for percentage-of-completion figures and the over-all reasonableness of the reports must necessarily rest with the project manager or superintendent. Many of the more progressive construction companies have both the job office manager and the project manager or superintendent sign the accounting reports.

22

Applications of Accounting Machines

Mechanized accounting has been slower to take hold in the construction industry than in other industries for several reasons. First, the very small contractors do not have the volume of business necessary to justify the cost of installing the equipment. Second, there has been a tendency on the part of a majority of construction men to minimize the part accounting plays in their operations. Accounting personnel have been looked upon as "mere clerks" and the memorandum field costs kept by the engineers have been thought by many to be the only records that "mean anything." Third, the larger firms, which one might expect to be the first to use such equipment, frequently decentralize their accounting to the field offices, where conditions are the least favorable to mechanization. Fourth, it is only recently that bookkeeping machines have been developed rugged enough to stand up in the field office, where a breakdown can cause real trouble on a fast-moving job with a large number of employees.

However, with the increasing cost of keeping time, making payrolls, and preparing the ever-increasing number of collateral reports required by government agencies, unions, insurers, and others, more serious and successful attempts to mechanize payroll routines have been made. Once this step is taken, other machine applications follow quickly. Appendix B contains the text of an article from the Associated General Contractors' magazine, *The Constructor,* describing how one general contracting firm successfully (and profitably) applied machine bookkeeping methods to solve its accounting problems. It is the purpose of this chapter to describe some of the principles to be applied in mechanizing the accounts of a contractor and to point out some of the advantages and disadvantages.

The savings in time and money made possible by machine accounting fall into essentially three categories:

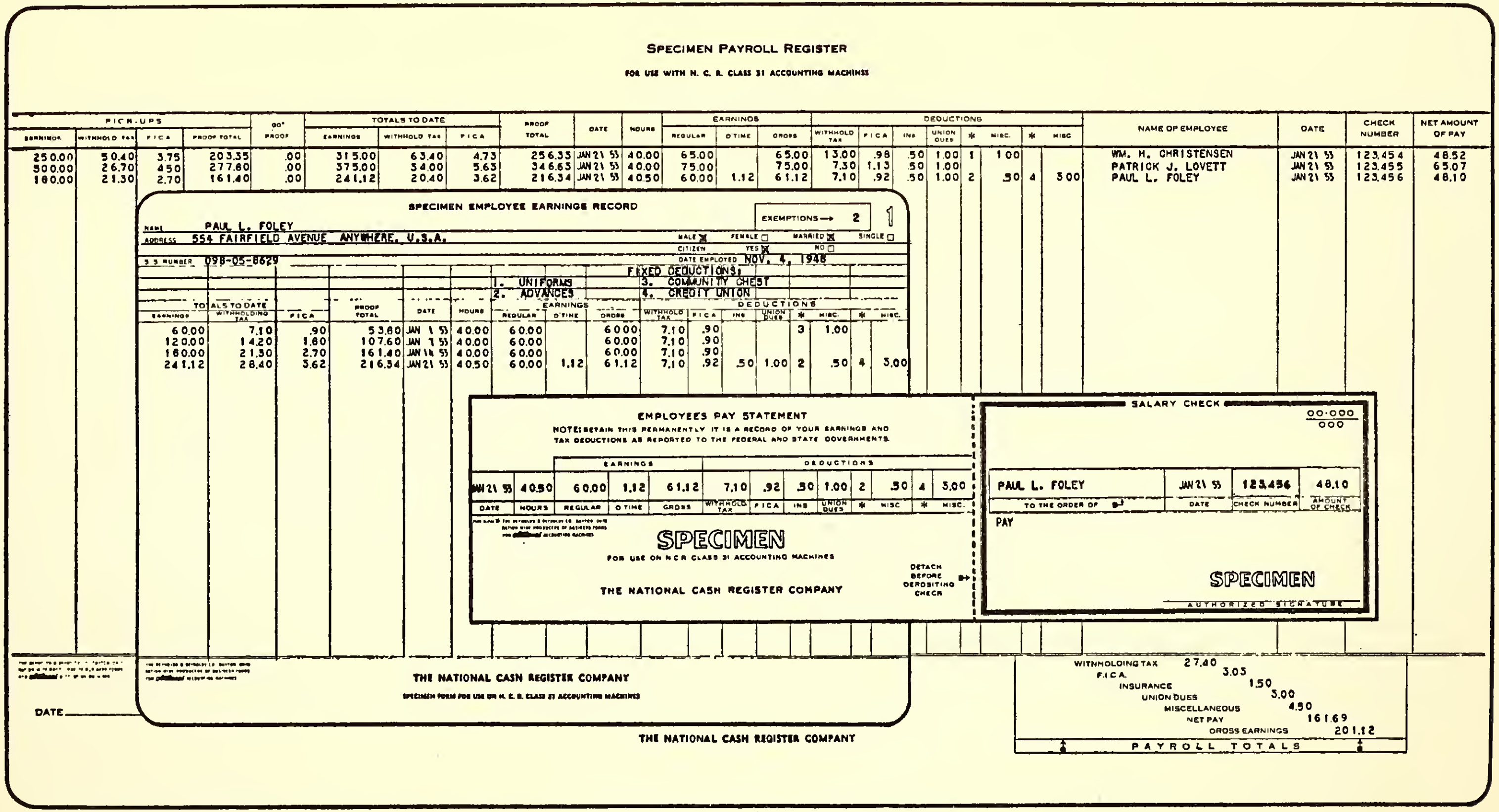
1. Duplication of work is reduced by preparing two or more records at a single writing.

2. Faster and more accurate machine calculations, together with automatic balancing, combine to speed up the processing of detailed data and reduce errors in calculation.

3. Through use of automatic "form bars," there is no loss of time or motion in getting figures into the proper columns.

There are pitfalls too. Some bookkeeping machines require experienced operators. Other machines may require service from some distant point if they break down. On jobs where there is work for only one machine and one operator, a failure on the part of either could delay the entire job. Most construction jobs move too fast to allow for such delays. The records, and particularly the payrolls, must be completed on time or the job will be faced with additional costs. Often the supply of electric power at job sites is uncertain or is of a different frequency from that in the cities. Machines built for alternating current may fail when used with direct current. Dust and dirt at the job site may foul the mechanism of the bookkeeping machines and inexperienced operation can cause some machines to jam or break down. These are some of the reasons why machine bookkeeping has not been adopted more readily by the construction industry.

Nevertheless, the machines themselves are constantly being simplified and improved. Job site electric power sources are improving, and many devices have been perfected for adapting the available current to the machines. Most important of all, the level of accounting know-how in the construction industry has been steadily rising and, as a result, individual construction executives have become more openminded about the desirability of spending money on improved accounting methods. As a result, bookkeeping machines are being used by a constantly increasing number of construction firms when volume is large enough to warrant machine methods.



SPECIMEN PAYROLL REGISTER

FOR USE WITH N. C. R. CLASS 31 ACCOUNTING MACHINES

PICK-UPS				90°	TOTALS TO DATE			PROOF	DATE	HOURS	EARNINGS			DEDUCTIONS								NAME OF EMPLOYEE	DATE	CHECK NUMBER	NET AMOUNT OF PAY
EARNINGS	WITHHOLD TAX	F I C A	PROOF TOTAL	PROOF	EARNINGS	WITHHOLD TAX	F I C A	TOTAL			REGULAR	O'TIME	GROSS	WITHHOLD TAX	F I C A	INS	UNION DUES	*	MISC.	*	MISC				
250.00	50.40	3.75	203.35	.00	315.00	63.40	4.73	256.33	JAN 21 53	40.00	65.00		65.00	13.00	.98	.50	1.00	1	1.00			WM. H. CHRISTENSEN	JAN 21 53	123,454	48.52
300.00	26.70	450	277.80	.00	375.00	34.00	5.63	346.63	JAN 21 53	40.00	75.00		75.00	7.30	1.13	.50	1.00					PATRICK J. LOVETT	JAN 21 53	123,455	65.07
180.00	21.30	2.70	161.40	.00	241.12	20.40	3.62	216.34	JAN 21 53	4050	60.00	1.12	61.12	7.10	.92	.50	1.00	2	.50	4	3.00	PAUL L. FOLEY	JAN 21 53	123,456	48.10

DATE ______

SPECIMEN EMPLOYEE EARNINGS RECORD

EXEMPTIONS → 2

1

NAME PAUL L. FOLEY

ADDRESS 554 FAIRFIELD AVENUE ANYWHERE, U.S.A.

MALE ☒ FEMALE ☐ MARRIED ☒ SINGLE ☐

CITIZEN YES ☒ NO ☐

S S NUMBER 098-05-8629

DATE EMPLOYED NOV. 4, 1948

FIXED DEDUCTIONS:

1. UNIFORMS
2. ADVANCES
3. COMMUNITY CHEST
4. CREDIT UNION

TOTALS TO DATE			PROOF TOTAL	DATE	HOURS	EARNINGS			DEDUCTIONS							
EARNINGS	WITHHOLDING TAX	F I C A				REGULAR	O'TIME	GROSS	WITHHOLD TAX	F I C A	INS	UNION DUES	*	MISC.	*	MISC.
60.00	7.10	.90	53.80	JAN 1 53	40.00	60.00		6000	7.10	.90			3	1.00		
120.00	14.20	1.80	107.60	JAN 7 53	40.00	60.00		60.00	7.10	.90						
180.00	21.30	2.70	161.40	JAN 14 53	40.00	60.00		60.00	7.10	.90						
241.12	28.40	3.62	216.34	JAN 21 53	4050	60.00	1.12	61.12	7.10	.92	.50	1.00	2	.50	4	3.00

THE NATIONAL CASH REGISTER COMPANY

SPECIMEN FORM FOR USE ON N. C. R. CLASS 31 ACCOUNTING MACHINES

EMPLOYEES PAY STATEMENT

NOTE: RETAIN THIS PERMANENTLY IT IS A RECORD OF YOUR EARNINGS AND TAX DEDUCTIONS AS REPORTED TO THE FEDERAL AND STATE GOVERNMENTS.

		EARNINGS			DEDUCTIONS							
DATE	HOURS	REGULAR	O TIME	GROSS	WITHHOLD TAX	F I C A	INS	UNION DUES	*	MISC	*	MISC.
JAN 21 53	40.50	60.00	1.12	61.12	7.10	.92	.50	1.00	2	.50	4	3.00

SPECIMEN

FOR USE ON N C R CLASS 31 ACCOUNTING MACHINES

THE NATIONAL CASH REGISTER COMPANY

DETACH BEFORE DEPOSITING CHECK

SALARY CHECK

00-000
000

TO THE ORDER OF	DATE	CHECK NUMBER	AMOUNT OF CHECK
PAUL L. FOLEY	JAN 21 53	123,456	48.10

PAY

SPECIMEN

AUTHORIZED SIGNATURE

WITHHOLDING TAX 27.40
F.I.C.A. 3.03
INSURANCE 1.50
UNION DUES 3.00
MISCELLANEOUS 4.50
NET PAY 161.69
GROSS EARNINGS 201.12

PAYROLL TOTALS

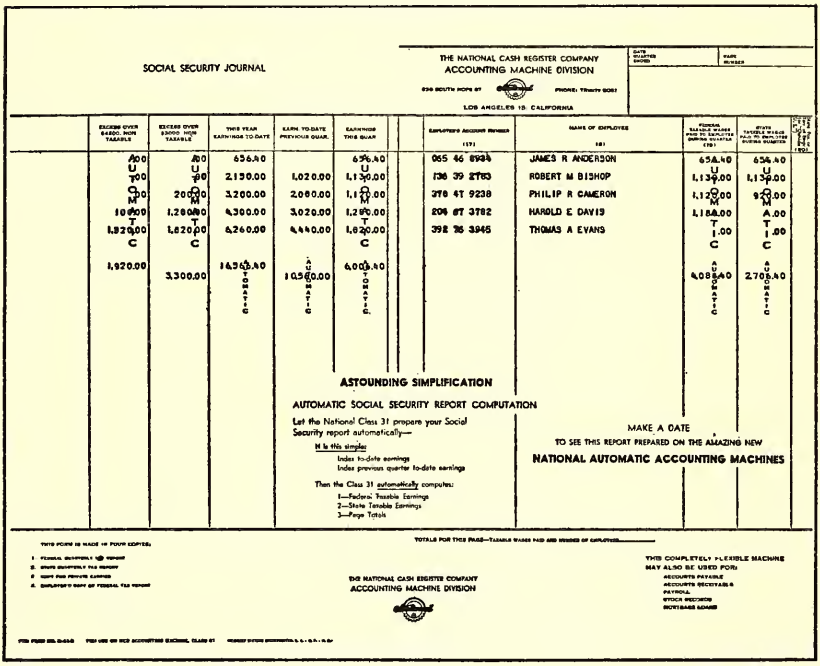
THE NATIONAL CASH REGISTER COMPANY

Fig. 22.1 Payroll system

This simple system and the one shown in Fig 22.2 were designed for the National Cash Register Company's Model 31 bookkeeping machine.

Payrolls and payroll taxes

One of the first, and most obvious, of the numerous machine applications is in the preparation of payrolls and paychecks. There are specially designed machines for payroll alone which can handle payroll, labor distribution, payroll tax records, and can insert the figure data on the paychecks in a single operation at rates varying from 10 to 20 checks a minute. However, these are specialized machines and have little application elsewhere. A simple payroll system (Fig. 22.1, 22.2) has been designed for the National Cash Register Model



SOCIAL SECURITY JOURNAL

THE NATIONAL CASH REGISTER COMPANY
ACCOUNTING MACHINE DIVISION
LOS ANGELES 15, CALIFORNIA

DATE QUARTER ENDED

PAGE NUMBER

EXCESS OVER $4200. NON TAXABLE	EXCESS OVER $3000 NON TAXABLE	THIS YEAR EARNINGS TO-DATE	EARN. TO-DATE PREVIOUS QUAR.	EARNINGS THIS QUAR	EMPLOYEE'S ACCOUNT NUMBER (17)	NAME OF EMPLOYEE (18)	FEDERAL TAXABLE WAGES PAID TO EMPLOYEE DURING QUARTER (19)	STATE TAXABLE WAGES PAID TO EMPLOYEE DURING QUARTER	(20)
.00	.00	656.40		656.40	065 46 8934	JAMES R ANDERSON	654.40	656.40	
.00	.00	2,150.00	1,020.00	1,130.00	136 39 2763	ROBERT M BISHOP	1,130.00	1,130.00	
.00	200.00	3,200.00	2,080.00	1,120.00	378 41 9238	PHILIP R CAMERON	1,120.00	920.00	
100.00	1,200.00	4,300.00	3,020.00	1,280.00	206 67 3782	HAROLD E DAVIS	1,180.00	.00	
1,820.00	1,820.00	6,260.00	4,440.00	1,820.00	392 36 3945	THOMAS A EVANS	.00	.00	
1,920.00	3,300.00	16,566.40	10,560.00	6,006.40			4,084.40	2,706.40	

ASTOUNDING SIMPLIFICATION

AUTOMATIC SOCIAL SECURITY REPORT COMPUTATION

Let the National Class 31 prepare your Social Security report automatically—

It is this simple:
Index to-date earnings
Index previous quarter to-date earnings

Then the Class 31 automatically computes:
1—Federal Taxable Earnings
2—State Taxable Earnings
3—Page Totals

MAKE A DATE
TO SEE THIS REPORT PREPARED ON THE AMAZING NEW
NATIONAL AUTOMATIC ACCOUNTING MACHINES

THIS FORM IS MADE IN FOUR COPIES:
1. [illegible]
2. [illegible]
3. [illegible]
4. [illegible]

TOTALS FOR THIS PAGE—TAXABLE WAGES PAID AND NUMBER OF EMPLOYEES

THE NATIONAL CASH REGISTER COMPANY
ACCOUNTING MACHINE DIVISION

THIS COMPLETELY FLEXIBLE MACHINE
MAY ALSO BE USED FOR:
ACCOUNTS PAYABLE
ACCOUNTS RECEIVABLE
PAYROLL
STOCK RECORDS
MORTGAGE LOANS

Fig. 22.2 Social security journal

31, a general purpose bookkeeping machine that costs about $10,000 including forms and installation costs. Note that the forms are arranged to show how the same figures are duplicated on three separate records, thus assuring identical amounts on each record when the time comes to balance. Of course, when changes are made to correct errors, failure to change all copies will throw the records out of balance. Some systems have been devised so that labor distributions print on perforated slips or on manually sorted punch cards that can be summarized for the job cost records.

Materials and supplies control

As pointed out in Chap. 9, control of materials and supplies depends, to a large extent, on the effectiveness of receiving and charging-out procedures. When the contractor's accounting system provides for perpetual inventories kept by units, with the only pricing being applied to the charge-outs, the bookkeeping machine could perform the following steps: (1) Record incoming items on stock cards, (2) Record the breakdown of payable vouchers according to the class of goods received, (3) Record the charge-outs on stock cards, and (4) Prepare perforated slips or cards to reflect amounts to be charged to each work item on each job.

Whether more than one step in the procedure would be required would depend on the type of machine used and the amount of information desired.

If purchases are made directly for each job, and no warehouse inventory is maintained, the stock cards in the list above can be eliminated. The cost distribution would appear on each invoice so that the distribution slips could be prepared for the cost summary while the payables are being posted.

Equipment timekeeping and accounting

For many contractors whose investment in equipment is heavy, an account showing the revenue earned and expense incurred on each major unit of equipment would be extremely useful in determining when to dispose of the equipment and how to set realistic equipment use rates. For the majority of contractors, however, the cost of maintaining such records by hand is prohibitive. If properly designed and operated, a bookkeeping machine system can summarize the cost of equipment operation and post it to individual ledger cards for each piece of equipment in a single operation. In a separate operation, equipment time cards can be summarized in an equipment earnings record and the individual ledger cards posted with the revenue. Analysis slips can be prepared, at the same time, to distribute the equipment revenue to the various jobs and work items, as the cost to the jobs of equipment used.

Other applications

In the preceding paragraphs it has been pointed out how, as a byproduct of gathering the data on payrolls, materials and supplies, and equipment revenues and costs, the cost records by jobs and by work items within the jobs may be developed. This record is made either through perforated distribution slips (Appendix B) or through punch cards, which are prepared by the machine as the original data are being processed and then summarized on the machine in the cost records. As each day's (or week's) posting is completed and balanced, the slips or cards should be wrapped, labeled, and stored until the income tax examination for the year to which they apply has been completed.

The applications of bookkeeping machines discussed above are the ones that are most commonly found in construction accounting. There are a number of others possible. The general ledger may be kept by machine, and if an adequate system of journal vouchers is kept to explain and support the entries, the results are entirely satisfactory. Another useful application is to the subcontractor's ledger, which can often be coordinated with the keeping of the job cost records and accounts payable records. One very useful variation of the accounts payable application is to enter all purchase orders and subcontracts in a "commitments" column. Then when the invoice is received the commitment is cleared out, and the invoice is substituted. In this way, management can not only be informed about liabilities actually incurred, but also those to which the company is committed.

Selecting bookkeeping machines

The cost of a bookkeeping machine, with forms and installation included, may run from $10,000 to $15,000. In addition, there is a certain amount of disruption of routine during the installation period. For that reason it is wise to approach the purchase of such a machine with caution so that the best possible results can be achieved. The first step in choosing a machine is, therefore, a determination of the information wanted so that the machine best suited to the contractor's specific need can be selected.

Regardless of the price, and regardless of what the machine can do, no machine is economical for a construction company unless immediate repair service is available when a breakdown occurs. Also, no machine is economical for a construction company unless its operation is simple enough so that at least two people in the office are capable of using it.

Finally, machine bookkeeping pays for itself only if the volume of work is sufficient to result in substantial savings in salary costs. It is true that a machine can normally turn out more work with less personnel, but unless that factor makes itself felt by reducing the overhead of the company the cost cannot be justified. However, the saving in overhead is sometimes hidden, as when a machine is purchased rather than additional help hired.

When it is decided that a machine is desirable and when the company's exact requirements have been determined, then the sales representatives for each of the major brands of bookkeeping machines should be consulted to see whose machine can accomplish the purpose at a minimum cost without sacrificing service or utility.

Punched card accounting

Applications of bookkeeping machines to construction payrolls, materials and supplies accounting, equipment timekeeping and accounting, and job costs have been discussed in the previous paragraphs. If the volume of transactions becomes large enough to justify the cost, the same work can be done with even greater speed by the use of punched card accounting. However, this system, except for the very largest construction companies, is rarely more economical than bookkeeping machines. Even the largest companies would not normally have sufficient volume to require this system if their accounts were not centralized.

One of the most successful applications of punched card accounting has been in the field of personnel records, for example, with termination and employment cards (Fig. 22.3, 22.4).

Other machine applications

As with any activity largely accomplished by hand, there are a great many possible machine applications. For example, Addresso-

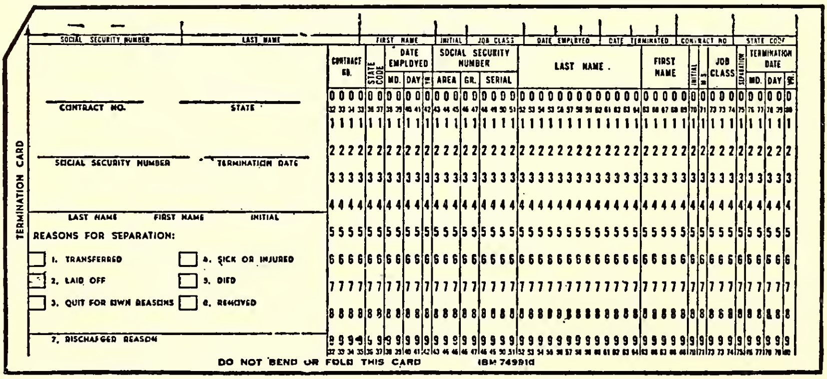


Fig. 22.3 Termination card

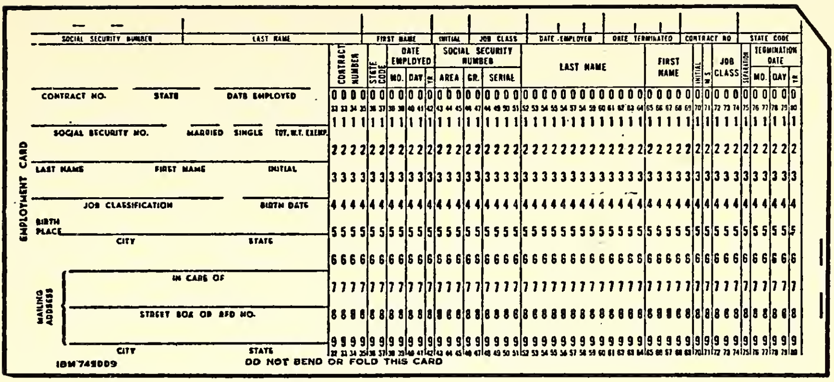


Fig. 22.4 Employment card

graph or Elliott equipment can be used to imprint names on paychecks in order to save the time of typing or writing them. If payrolls have several thousand names, a real saving can be effected, even when turnover is high.

Duplicating processes have been used successfully to reduce copying errors and to make facsimiles of payrolls, purchase orders, reports, and similar documents promptly available in as great a quantity as may be needed. A recent promising development in the field of duplicating equipment is found in a number of photographic duplicators, such as Verifax, Thermofax, Duplimat, Photocopy, Ozalid, and Bruning.

Because of the peculiarities of the construction industry, the high degree of automation possible in other industries may be a long way off. Nevertheless, progress is being made and even the smallest contractors now have available automatic calculators such as the Monroe, Marchant, and Friden, and printing calculators such as the Remington Rand and the Olivetti.

23

Functions of Outside Accountants

Many small contractors employ a public accountant to "write up" their books each month, to prepare their current payroll tax and sales tax returns monthly or quarterly, and to prepare their federal and state income tax returns at the end of the year. For very small operations, this is usually a reasonably satisfactory arrangement, and the cost is ordinarily modest.

Unless the accountant is a certified public accountant, there is a good chance that he is not admitted to practice before the U.S. Treasury Department. However, this lack, for the most part, is not a serious handicap, especially since the recent changes in Treasury policy, which permit unenrolled persons who prepare income tax returns to represent taxpayers before revenue agents with respect to tax liability for years covered by such returns. It is quite common, in some areas, to find none of the local attorneys admitted to practice before the Treasury Department, although they would normally be entitled to enrollment on application. When neither the contractor's accountant nor his attorney is admitted to Treasury practice, it is usually a good idea to call in an enrolled agent or attorney to manage a controversy with the Internal Revenue Service.

Should the keeping of the records or the preparation of the income tax return require the interpretation of a contract or other legal document, or if lien rights or the title to property are involved, the contractor should trust neither his own knowledge nor that of the public accountant, but should consult his attorney. Usually it is "free" legal advice that is the most expensive, and this truism applies to tax planning. If bookkeeping is done by an outside public accountant in the manner described, the contractor should review every statement and tax return carefully, and should not accept or act on it until he understands and agrees with the essential accuracy of every figure. Regardless of how competent or dependable the bookkeeper may be, it is the contractor who is financially responsible. Unless the figures make sense, there is a good chance that they are not correct.

Monthly financial statement

When volume becomes large enough to justify hiring a bookkeeper, the contractor usually finds that the bookkeeper he is able to hire needs help on monthly and year-end closings, and on financial statements and tax returns. It is usually most economical and satisfactory to employ an outside accountant (preferably one experienced in construction accounting) to perform this service. Here again, the accountant may or may not be certified and he may or may not be admitted to practice before the Treasury Department. It is a good idea for the contractor to find out from the loan officer of his bank and from the financial analyst of his bonding company the extent to which they are willing to rely on financial statements prepared by an uncertified accountant. Again, the contractor should release no statements or tax returns until he is personally satisfied with each figure and each explanation. Any important legal or tax decision should be checked with a specialist in the field.

Monthly audit

As a contractor's business grows, he usually finds it profitable to employ a bookkeeper competent to prepare financial statements and tax returns. This change in emphasis is accompanied by a shift in the type of service he requires from his outside accountants. At this point he needs a public accountant, preferably certified, who is thoroughly experienced in the accounting and tax problems of construction companies in general and, if possible, with the particular type of construction in which the contractor is engaged. It is the duty of the public accountant to satisfy himself as to the correctness of the statements and the tax returns. If the outside accountant does his job well, it will be unnecessary to make demands on the contractor's time except to secure decisions on the accounting or tax treatment of important issues that require technical construction knowledge.

Under this type of operation, the outside accountant normally prepares the income tax returns and the year-end financial statements. He will also, as a rule, render an audit report and an auditor's opinion on the financial statements. Nevertheless, his principal function is to relieve the contractor of the detailed supervision of record keeping that was necessary under the system in which the outside accountant kept all or part of the books. At this point, too, the contractor begins to enjoy the benefits of an outside check on his own thinking, accounting methods, and record keeping procedures, as well as the advantages of being able to supply his bank and bonding company with audited statements.

Annual audit

At some point in the growth of a contractor's business he will find it economical to hire a fully trained and experienced accountant as chief accountant or controller. Then the level of service required of the outside accountant rises to a peak and accordingly calls for engaging an accounting firm with the highest professional qualifications in accounting and income tax knowledge, and also with a thorough understanding of all phases of construction accounting and financing.

At this level the accountants, during the year, serve as consultants on technical tax and accounting problems as they arise. At the year's end, the audit is made, and the income tax returns are either prepared by the accountants, or are prepared by the company and checked by the accountants for technical correctness. When the annual audit is made, the independent accountants will also make a critical analysis of the over-all record keeping and accounting procedures of the company, and will make such suggestions as may be in order, to improve their strength or efficiency. At this level it is not uncommon for the accountants to schedule a meeting with the company's bankers and bondsmen to review the statements. If statements or reports are to be made to regulatory bodies such as the Securities and Exchange Commission, the outside accountants customarily prepare them. Some states, like California, require a qualification statement certified by an independent accountant before a contractor may bid state work, and these statements are usually prepared by the outside accountants at the time of the annual audit.

Internal control functions

Internal auditing, in the usual sense, is not as well developed in the construction industry as in some others. Relatively few public accountants know enough about the operational end of construction to do more than a routine checking job. To be really effective on internal auditing in a construction company, the auditor must be able to evaluate the figures he sees in terms of his observations on the job. Therefore internal auditing on the jobs themselves is better done either by the employees of the company who are especially trained for the job, or employees of the accounting firm whose background includes substantial experience in construction job offices. A public accounting firm that can furnish such auditors can make a very valuable contribution to the auditing of its construction company clients.

There are functions, however, in the field of internal auditing that any competent public accountant can and (given the opportunity) should do. First, he can make sure that he knows how the data are compiled for each record he examines. With that knowledge, he can evaluate critically the chances of fraud or of error escaping discovery. Any loopholes he discovers can then be discussed with management to determine whether the risk created by the loophole is worth the cost of closing it. For example, if each foreman fills out and turns in the time cards for the men on his crew, the opportunity for fraud exists through collusion between a foreman and a workman. The best way to detect or prevent such fraud would be through periodic spot checks and counts by a field timekeeper who would account physically for the presence of all men on the payroll. Whether the risk justifies the cost in a given situation is a matter for management to decide, but the auditor should call it to their attention.

Second, the auditor can provide technical supervision over the accounting, and carry out regular tests to see whether established procedures are being followed. For example, if the procedures called for a field timekeeper, as described above, failure to follow the procedures should be discovered and reported by the independent public accountant. The scope of the outside auditor's assignment should be such that he can find such omissions. However, if the client–contractor's business is such that the system for timekeeping and payroll could be improved so as to do away with the timekeepers and still retain the same degree of control, then it is up to the outside auditors to call the possible improvement to the attention of management, and if it can be made without disturbing other phases of the operation, to supervise putting the improvement into effect.

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Choice of Accounting Method

In Chap. 2, the various accounting methods available to a construction company were compared technically. Included in the comparison were the cash method, the accrual method, the two long-term contract variations of the accrual method known as the completed-contract method and the percentage-of-completion method, and hybrid methods. In this chapter the emphasis is not upon the methods themselves but on their application to a number of widely varied situations.

Many large jobs widely scattered: If there are numerous large jobs spread over a wide area, diversification should cause individual differences to average out, so that the aggregate result should be reasonably accurate regardless of the method of accounting chosen. Individual jobs would normally report enough operating figures to permit adequate job site management. Assuming a corporate form of organization, and in the absence of an excess profits tax, the time when profits are realized would seem to make little difference. On that basis the completed-contract method of determining income would appear to be logical, and certainly the most conservative, while the percentage-of-completion method would be vulnerable to errors in estimating.

On the other hand, operations of this size and extent may involve financing problems, bonding problems and stockholder problems. These problems are often simpler when the percentage-of-completion method keeps the flow of book profits somewhat more regular than would normally be possible under the completed-contract method. One of the most potent incentives to the use of the percentage-of-completion variation as a method of reporting income is income taxation. Steeply graduated surtax rates on individuals and excess profits taxes on corporations put a heavy premium on keeping the income curve as smooth as possible. For these reasons, the large companies with widely scattered operations have tended to use either the straight accrual method, without either of the long-term contract variations, or the percentage-of-completion method of determining income.

Few large jobs in restricted area: The fewer jobs a company has, the greater the variation in income between years that can be occasioned by use of the completed-contract method of determining income. Also, the smaller the territory in which the company operates, the greater will be the variations caused by purely local conditions. If the company is incorporated so that it need not be concerned with high surtax rates, and if it is well enough financed so that its borrowing and bonding capacity is above suspicion, the completed-contract method of determining income insures against spending profits that may fade away before the end of the job.

However, if bonding capacity, credit, and stockholder considerations call for a more or less uniform flow of income on the operating statement, then either the straight accrual or percentage-of-completion methods are indicated. The principal hazard inherent in reflecting, on the financial statements, profits that are still tied up in retained percentages and other job assets lies in the tendency on the part of many contractors to think of job profits as available cash, and to make commitments calling for use of the cash before it is available.

If joint ventures are sponsored (and hence operated) by others, there is not much control over the time when their profits will appear on the financial statements. Therefore, a somewhat greater degree of control over the timing of profits from the company's own jobs is required. If the percentage-of-completion method is used, a normal margin for variations in estimating can often provide the necessary control.

One or two large jobs: Companies having one or two large jobs and one or two joint ventures are less likely to be incorporated than the larger companies, and hence the pressure of high surtax rates is very strong. It is rare to find a construction company organized as a partnership when the facts favor reporting as a corporation for tax purposes. Therefore, the use of straight accrual or percentage-of-completion methods becomes a virtual economic necessity.

However, the completed-contract method may be practical if the contractor is able to unbalance his payment schedules so as to free enough cash to pay the taxes in the year they become a liability, and if the contractor's flow of joint venture income is steady enough to smooth out the income curve.

Many large and small jobs widely scattered: A large number of jobs over a wide area, regardless of the size of the individual jobs and regardless of the accounting methods used, will tend to have an equalizing effect on income. Strict interpretation of the income tax laws would seem to require that, at least for jobs running less than one year, either the cash method or the straight accrual method be used. For obvious reasons, the cash method provides little in the way of information for management, although if the jobs are small enough there may be little enough variation for this method to produce a reasonably accurate over-all result.

On jobs that run over one year the contractor is entitled to use one of the long-term contract methods, but often it is better to sacrifice the advantage of the long-term methods for the greater economy of a single consistent method. The straight accrual method has the disadvantage of treating as income the amounts currently billable without reference to job progress or earnings. This method becomes increasingly applicable as the jobs become smaller and shorter. If the jobs are small enough to dispense with progress billings and substitute a single payment on completion of the job, the straight accrual method approximates the completed contract method. In fact, as a practical matter, many small contractors close all jobs on completion regardless of whether there are any progress billings.

Small, short jobs: Companies having small, short jobs almost always collect payment on completion, and even if there are jobs with progress billings, the completed-contract method is most practical even though technically not permissible for tax purposes. Of course, the straight accrual method is preferable when applicable.

Speculative builders: Many small contractors build houses or stores on speculation. The speculative structure is usually owned by the contractor and assumes more of the character of an inventory item than the usual construction job. Thus, the straight accrual method becomes applicable.

Builders of tract housing often receive their costs through a disbursing agent or "joint control." Then an order on the joint control is the equivalent of a check so far as the contractor's accounting is concerned. However, the person to whom the order is issued must present it to the joint control to receive payment. An exception is usually made for payroll checks. The joint control check is issued to reimburse the builder's payroll bank account, and the builder's paychecks are issued to the employees.

Custom builders: It is usual for the custom builder of residences and small commercial buildings to receive progress payments. It is unusual to find such a builder with a job that lasts over a year and so qualified (income tax-wise, at least) to use one of the long-term contract methods of reporting income. Technically, most builders in this group could qualify for the use of the cash method of accounting but, for the most part, they can achieve a result closely approaching the percentage-of-completion method by using straight accrual accounting.

Many builders in this class, however, prefer to take up income on the completed-contract method. When properly applied to work of this type, the completed-contract method actually reflects income more accurately than the other available methods, and is therefore usually accepted without question for income tax purposes.

Income tax effect

The federal income tax regulations permit the use of the cash method of accounting whenever inventories are not a "material income-producing factor." Therefore, since relatively few construction contractors have inventories in the strict sense of the word, most such contractors may use the cash method of accounting if it supplies management with sufficient information. The only limitation for tax purposes is that it be properly elected and consistently applied. There is a growing tendency on the part of the taxing authorities and the courts to require the use of the same method for both accounting and tax reporting. A recent case in the Ninth Circuit court held that the Commissioner of Internal Revenue could require an engineering firm that kept its books by the accrual method and reported income tax by the cash method to use the accrual method for both.

The doctrine of constructive receipt (which requires including in income the cash not reduced to actual possession) has been applied to the offsetting by a creditor of an amount due to him against an amount due to the contractor. In other words the full amount of both the receivable and the payable must be taken into account. Generally speaking, the cash method may prove satisfactory for small contractors whose jobs are of short duration and whose working capital position is such that they cannot pay the tax on income that has not been reduced to cash. Even for those contractors, it is not permissible to charge capital expenditures such as equipment directly to expense.

Most contractors whose operations are substantial find either the accrual method, or one of its long-term contract variations, more satisfactory for both management and for tax purposes. Properly applied, this method comes closer to a true matching of revenues and related costs than any other. Under court decisions, retained percentages need not be included in income determined by the accrual method, and presumably, though not necessarily, the same reasoning would apply to retained percentages payable to subcontractors. Accounting practice does not follow the court rulings and, except in unusual circumstances, the Internal Revenue Service follows the accounting method.

If the payment schedules on larger jobs are not unbalanced (to permit disproportionately high progress payments early in the job) and if percentage of completion is computed on the basis of actual work done and not limited merely to completed units of work in place, the accrual method and the percentage-of-completion variation will produce approximately the same results.

If contracts will (or can be made to) last a year or more, either the percentage-of-completion or completed-contract variations may be used. If payment schedules are unbalanced, or if it is desired to defer as much tax as possible, the vague and unrealistic attitude of the Internal Revenue Service toward the percentage-of-completion variation makes it an ideal vehicle for tax shifting. However, if it is to be used for that purpose, the requirement in the regulations for an engineer's or architect's certificate should not be ignored, as it usually is. One midwestern engineering firm put it very bluntly. "The more we are trying to get away with," said the controller, "the closer we follow the letter of the regulations."

One of the minor (but often important) details in reporting the selection of one of the long-term contract variations of the accrual method arises in the preparation of the income tax return for the year in which the method was adopted. Where the taxpayer is asked to check either "cash basis" or "accrual basis" on the return as indicative of the method employed, the safest procedure, if either of the long-term contract variations is to be adopted, is to mark the "accrual" square and follow it with the words "completed-contract-method" or "percentage-of-completion method," whichever is applicable. Frequently, a revenue agent whose zeal exceeds his understanding will attempt to interpret failure to so designate the method as an election not to use it.

The completed-contract variation of the accrual method is the most conservative, and in many cases the most accurate, method of accounting for a construction contractor's income. Small contractors with comparatively short jobs (who are technically not entitled to use it for federal income tax purposes) favor its use because it eliminates the laborious and costly estimates of percentage of completion, and because it includes contract revenue in income in the year when cash to pay the tax becomes available. Larger contractors with longer jobs (who are technically entitled to use the completed-contract variation) have tended to avoid it because of the tendency to bunch large amounts of income in a single taxable year and thereby subject themselves to excess profits tax (in periods when such taxes are in effect); or to the corporate "pay-as-you-go" taxes presently in effect; or to the graduated surtax rates applicable to noncorporate taxpayers.

Usefulness to management

As was pointed out previously in this discussion, the cash method of accounting is of minimum usefulness to management. However, so long as the business is small enough so that management needs no help from accounting, the cash method enables the contractor to supply the demands of government at a minimum cost in time, effort, and money.

The accrual method of accounting is usually the method most likely to provide management with usable data because it takes into account more of the known facts relative to the company's operations. As applied to the construction business, the accrual method often distorts income unless it is adjusted to exclude unearned income and to defer the heavy costs of getting a job started until the period in which the related income is taken into account. Because this procedure is somewhat complicated and not well understood, accrual-method accounting is often called misleading. From the viewpoint of management, however, the accrual method, properly understood and applied, is potentially the most useful method.

Bank and bonding credit

Generally the method of accounting used by the contractor has little bearing on his credit with banks and bonding companies. If supplied with all the supplementary data they request, these concerns will make their own adjustments. The banks, of course, are interested in the sources of funds from which their loans are to be repaid, and are often more interested in a cash forecast than in the financial statements themselves. The bonding company is generally more interested in the current position and the ability to finance the work bonded. Both, of course, are interested in the security to which they may look if they incur losses.

Banks and bonding companies may have to adjust the figures in their clients' statements to secure the specific information they need. Beyond their own immediate needs, however, banks and bonding companies are interested in their clients' accounting methods as some indication of the management skill upon which the client depends for success. To the extent that the management of a contracting firm depends upon obsolete or inadequate accounting methods, its credit and bonding capacity may be limited.

No comparison of accounting methods available to construction contractors would be complete without making reference to an outstanding analysis of the subject presented to the 1954 annual meeting of the American Institute of Certified Public Accountants by Edward B. Wilcox. It is presented as Appendix C.

Appendix A

Contractor's Job Cost System

By Systems Service Department, Charles R. Hadley Company

Reprinted from "Hadley Service Bulletin"

The big problem faced by all contractors, whether they be residential builders, general contractors doing all types of construction work, or highway contractors, is the recording of costs. Note that we are speaking of recording costs rather than determining costs.

Today most contractors determine their costs with great accuracy, if only to protect themselves in case of a tax audit. Their great difficulty is that these costs are determined after the job is finished. What they need, and know they need, is an accumulation of costs day by day which they know is accurate.

The accurate recording of costs is essential to support year-end tax returns whether the contractor uses the percentage-of-completion method or the completed-contract method. What is more important to the contractor, however, is the determination of whether costs are running higher or lower than estimated. The most astute contractor can do nothing about excess costs after the job is finished. That same man may, however, be able to prevent a financial disaster if he learns early enough that costs are piling up faster than the progress on the job warrants.

System standardized

Prior to standardizing the "write it once" accounts payable system with job cost ledger for contractors, the Charles R. Hadley Company had, for several years, been designing and installing special systems of this nature for different types of contractors. From the variety of problems presented, and from the experience gained in solving these problems, our standard system was developed.

Anyone who has ever worked in a contractor's office, either as an accountant or as an auditor, will immediately recognize the truth of the following statements: (1) the job cost ledgers are not kept strictly up to date, and (2) seldom, if ever, does a trial balance of the job cost ledgers agree with the balance in the general ledger account "Work in progress."

With the "write it once" system any number of jobs can be operated at one time through a single set of books and any one of these jobs can be split up into as many subsections as desired. All records can be kept up to date with the least amount of effort and the job cost ledgers on every individual job, and every subsection, can be up to date and in balance at all times.

The heart of the system is the record of invoices and work in progress, Form N433, which is illustrated with job cost ledger, Form N434, and accounts payable ledger, Form N571, superimposed (Fig. A.1).

Journal N433 is used not only to record materials or services purchased from outside vendors, but acts as a general journal when transferring internal charges to the individual job cost ledgers. These internal charges may consist of the transfer of materials from inventory to specific jobs, the transfer of materials from one job to another or back to inventory, the distribution of accrued payroll to specific jobs, the allocation of overhead charges to specific jobs, or any other transaction that affects the cost of one or more jobs.

Directly connected with the system through the accounts payable ledger, Form N571, is the check record, Form N431, and the accounts payable check, Form W524.

Mechanics of the job cost system

The object of the system is not only to keep job costs as up to date as the latest charges available, but to establish absolute control over accounts payable, labor costs, material costs, subcontract costs, and all others which might be charged to "Work in progress."

Some bookkeepers distribute indirect expense items such as rent, utilities, and the like, on the check record at the time the items are paid. Such a procedure is not recommended because accounts payable control over these items is lost. It is much better, for the sake of control, to set up an accounts payable ledger for each vendor, including the utility companies and others of this nature, and to record these payables on the record of invoices.

Therefore, every entry on the record of invoices, Form N433, will affect an accounts payable ledger, a job cost ledger, or both.

It follows that no entry can be made on the record of invoices unless the left half of the journal is covered by an accounts payable ledger, the right half covered by the appropriate job cost ledger, or both.

Just as no entry can be made on the journal without the presence of one or both ledgers, neither can any entry be made on a ledger unless it is superimposed upon a journal.

Journal control

To see how control of job cost ledgers is obtained through the journal, a clear understanding of the use of each column is necessary. At the risk of seeming too elementary, we present the following outline: (Columns have been numbered consecutively, from left to right, on the illustration, Fig. A.2.)

Column 1. Enter date from original media, such as date of invoice.

Column 2. This is to identify the source of the entry, such as an invoice number, credit memo number, material requisition, or the page number of the payroll journal when recording labor charges.

Column 3. All invoices recorded are a credit to accounts payable, and could be debited to inventory, column 9, directly to a job, columns 15, 16, 17, or 19, or to any appropriate general ledger account, column 20.

The debit column is used to record credit memoranda issued by vendors. They offset credit entries which may be to jobs, to inventory, or to some other general ledger account. If the contractor follows the procedure of issuing a debit memorandum to the vendor upon the return of unacceptable material, the debit memo will be entered here. The vendor's credit memo, when received, becomes, in effect, a confirmation of the debit memo previously recorded.

Column 4. This credit to "Accrued payroll" is to offset labor charged directly to jobs in column 14. The two entries are always equal.

Column 5. As under "Accrued payroll," an offsetting entry is made in this column whenever overhead is charged to a job in column 18.

Column 6. This column adds flexibility. Its frequency of use will depend upon how the blank columns, 9, 10, and 17, are used (see below). Its essential purpose is described in the heading "Other credits." When an offsetting credit entry is required and it cannot be assigned to any other column, it goes in column 6.

For example: If a mistake were made, charging architects' fees or permits to the wrong job ("Other charges"), it could be corrected through the use of column 6. The mechanics of such a correction are the same as described under columns 9 and 10. Without column 6, such a correction would have to be made through the general journal.

Columns 7 and 8. These two columns provide posting control for the accounts payable. The balance shown in column 7 on the ledger is entered in column 8. The gross amount of the invoice being recorded is added to the balance to obtain the new balance.

Columns 9 and 10. These have also been left blank to make the form more versatile. In the illustration they are used as debit and credit columns for inventory. If considerable inventory is carried, this is the obvious use. Column 9 would handle the debits for all new materials received or for excess ma-

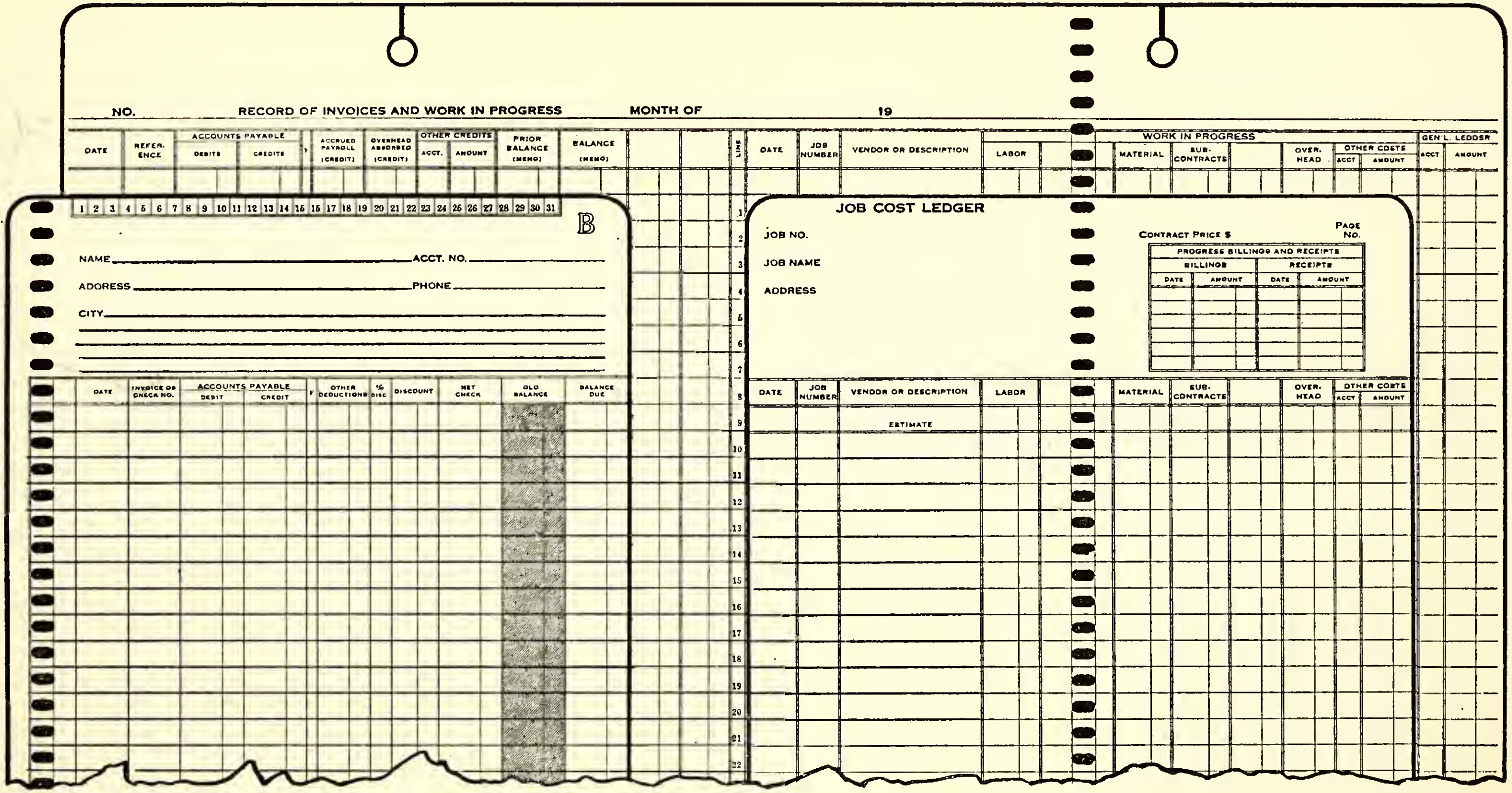
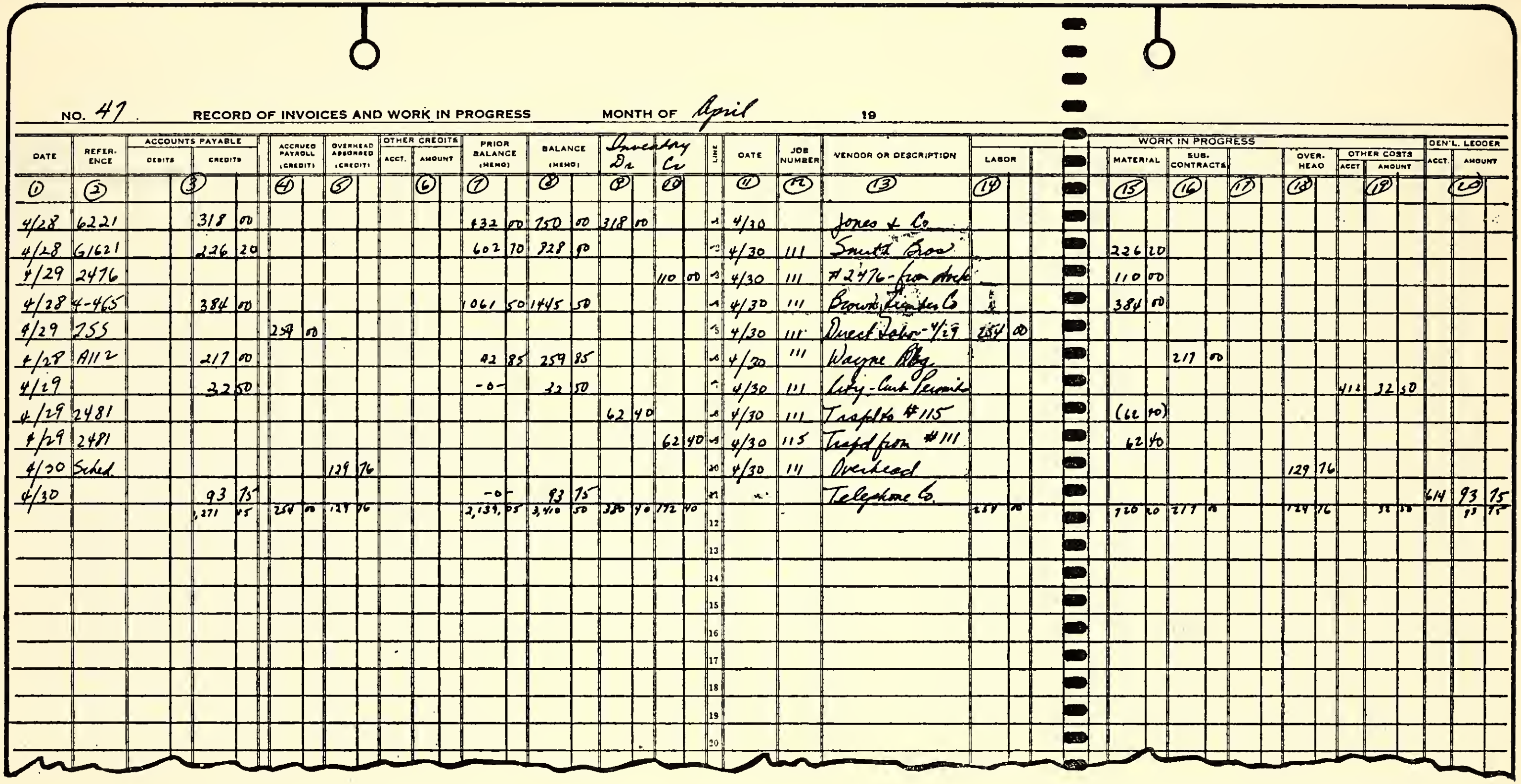


Fig. A.1 Accounts payable ledger and job cost ledger superimposed on the record of invoices and work in progress



NO. 47 RECORD OF INVOICES AND WORK IN PROGRESS MONTH OF April 19

DATE	REFER-ENCE	ACCOUNTS PAYABLE DEBITS	ACCOUNTS PAYABLE CREDITS	ACCRUED PAYROLL (CREDIT)	OVERHEAD ABSORBED (CREDIT)	OTHER CREDITS ACCT.	OTHER CREDITS AMOUNT	PRIOR BALANCE (MEMO)	BALANCE (MEMO)	Inventory Dr	Inventory Cr	LINE	DATE	JOB NUMBER	VENDOR OR DESCRIPTION	LABOR		WORK IN PROGRESS MATERIAL	SUB-CONTRACTS		OVER-HEAD	OTHER COSTS ACCT	OTHER COSTS AMOUNT	GEN'L. LEDGER ACCT.	GEN'L. LEDGER AMOUNT
①	②		③	④	⑤		⑥	⑦	⑧	⑨	⑩		⑪	⑫	⑬	⑭		⑮	⑯	⑰	⑱		⑲		⑳
4/28	6221		318 00					432 00	750 00	318 00		1	4/30		Jones & Co										
4/28	G1621		226 20					602 70	828 90			2	4/30	111	Smith Bros			226 20							
4/29	2476										110 00	3	4/30	111	#2476 - from stock			110 00							
4/28	4-465		384 00					1061 50	1445 50			4	4/30	111	Brown Printers Co			384 00							
4/29	755			254 00								5	4/30	111	Direct Labor - 4/29	254 00									
4/28	A112		217 00					42 85	259 85			6	4/30	111	Wayne Bldg				217 00						
4/29			32 50					-0-	32 50			7	4/30	111	City - Curb Permit							412	32 50		
4/29	2481									62 40		8	4/30	111	Trasfd to #115			(62 40)							
4/29	2481										62 40	9	4/30	115	Trasfd from #111			62 40							
4/30	Sched.				129 76							10	4/30	111	Overhead						129 76				
4/30			93 75					-0-	93 75			11	〃		Telephone Co.									614	93 75
			1,271 45	254 00	129 76			2,139.05	3,410 50	380 40	172 40	12				254 00		720 20	217 00		129 76		32 50		93 75
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Fig. A.2 Illustrative journal entries

These entries are shown as they would appear after the removal of ledgers and carbon. The journal is proved after each day's posting is completed.

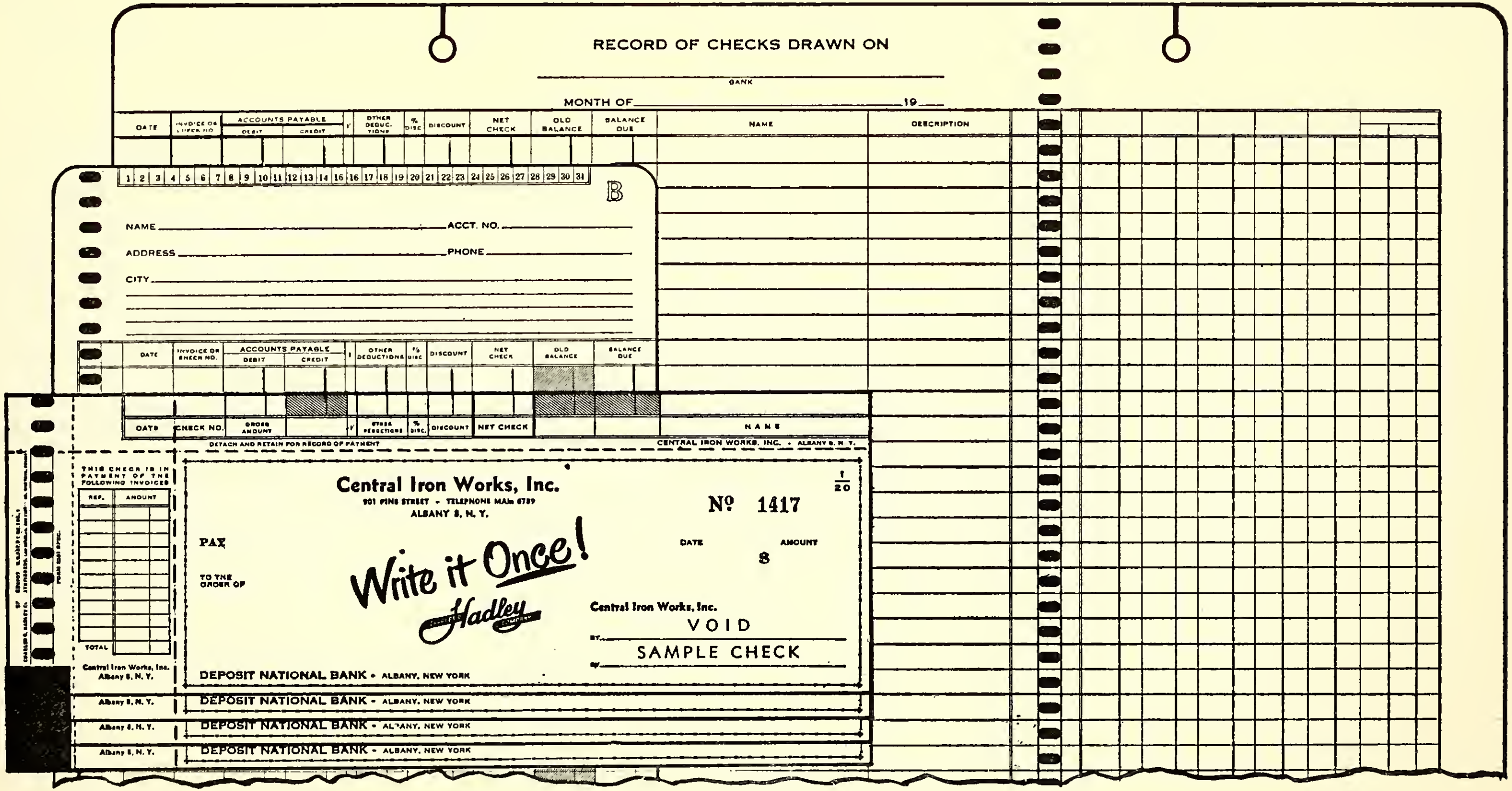


Fig. A.3 A bank of checks and the accounts payable ledger superimposed on the check record

The check stub has carbon on its reverse side to carry the impression to the ledger and, through carbon, to the journal. The three forms are thus written simultaneously.

terials returned to stock from a particular job. The offsetting credits for materials taken from inventory and charged to a job, under column 15, would be entered in column 10.

If materials were transferred from one job to another, columns 9 and 10 would act as a clearing account. The procedure would be: debit inventory, column 9, and credit the job, column 15 (an encircled entry), from which the material was taken; then credit inventory, column 10, for the same amount and debit the job, column 15, to which the material was transferred.

Some contractors charge each job periodically with a rental figure for the equipment used on the job. The figure used is approximately what would have to be paid if the equipment were rented rather than owned by the contractor. In such cases, one of the blank columns (9 or 10) could be labeled "Other income" or "Equipment rental income" to receive the offsetting credits when charges are made to the jobs.

If column 10 were used for income from equipment rental, column 9 could still be used for inventory. Both debits and credits would then be entered in the same column. Credit entries would be encircled to distinguish them from the debit entries. The column total would be a net figure, either debit or credit.

Column 11. This is the date the entry is made on the job cost ledger.

Column 12. The job number is entered each time as a control figure. Thus every entry on the journal which has been charged to a job can be traced to the particular job by its number. The repetition of the job number on the job cost ledger is visual proof that the charges have been made to the proper job.

Column 13. Where a vendor's name is not appropriate, a description, such as "overhead charges" or "material from stock," should be used.

We cannot emphasize too strongly that no entries can be made in cost columns 14 through 19 until the appropriate job cost ledger has been placed on the board.

Column 14. In this column will be entered the amount of direct labor to be charged to each job. This will probably be done weekly, although, if UniSort job time cards are used, it can be done daily. The total labor charged to all jobs must, of course, equal the total direct labor shown on the payroll journal. The corresponding credit is to "Accrued payroll," column 4.

Column 15. Charges for all material, whether taken from inventory or purchased specifically for the job, must be entered in this column.

Column 16. Entries in this column will represent invoices from subcontractors at gross. The amounts withheld pending completion and the filing of labor releases, etc., will be reflected in the "Balance" column on the accounts payable ledger for the subcontractor and, of course, in the accounts payable control account in the general ledger.

Column 17. This column was also left blank for flexibility. It may be used for any specific recurring cost, such as equipment rental as explained in connection with column 9.

Column 18. Overhead is usually a monthly charge, prorated to the jobs on some equitable basis. The offsetting credit is to "Overhead absorbed," column 5. Not all contractors charge overhead to the jobs. The practice is sufficiently common, however, to warrant printing the column heading.

Column 19. All costs of the job which are not provided for under columns 14 through 18 are entered here as "Other costs." Such charges as architects' fees, cost of blueprints, surveyors' fees, building permits, and inspection fees are typical.

Column 20. The amount of any item not chargeable to a job (or to inventory) and the account number to which it is to be charged are entered in this column.

Typical entries

To clarify the procedure, ten typical entries are shown on the illustration of journal N433 (Fig. A.2). Ledgers and carbons have been omitted in order to show the entries in full. It is assumed in all cases that the original media, from which these entries were made, have been checked for receipt of materials, prices, and extensions and that the indicated distribution has been approved by the proper authority. An adding machine tape shows the total of all invoices to be $1,271.45.

1. Invoice from Jones and Company for $318.00 chargeable to inventory. Accounts payable ledger used.
2. Invoice from Smith Brothers for $226.20 chargeable to materials delivered to job 111. Accounts payable ledger for Smith Brothers and job cost ledger for job 111 used.
3. Materials worth $110.00 were withdrawn from inventory on requisition No. 2476 and delivered to job 111. Job cost ledger used.
4. Brown Lumber Company invoice for $384.00 for materials delivered to job 111. Accounts payable ledger and job cost ledger used.
5. Direct labor amounting to $254.00 charged to job 111 from daily labor distribution sheet for January 29. Job cost ledger used.
6. Invoice from Wayne Plumbing Company for $217.00 for completing the rough plumbing on job 111. Accounts payable and job cost ledger used.
7. Invoice from the city for curb-breaking permit on job 111. Accounts payable and job cost ledger used.
8. Materials costing $62.40 were transferred from job 111 to job 115. This entry requires two lines to complete; on line 8, a debit is made to inventory and a credit to job 111; on line 9, a credit is made to inventory and a debit to job 115. Job cost ledgers for job 111 and job 115 are used.
9. End-of-month entry distributing $129.76, its share of overhead, to job 111. Job cost ledger used.
10. Telephone Company bill for $93.75. Accounts payable ledger used.

An entry, unless it is a transfer of costs from one job to another, seldom affects more than one job. Vendors and subcontractors generally submit separate invoices for different jobs. Should an invoice be received, however, covering more than one job, one line on the left of the journal would be used to record the invoice, but as many lines as there were jobs concerned would be used on the right in the work in progress section. For example: assume that in entry No. 4, above, the invoice from Brown Lumber Company had been for material chargeable half to job 111 and half to job 115. The total amount of the invoice, $384.00, would be recorded on the accounts payable ledger as illustrated on line 4. The charge to job 111 on line 4, however, would be only $192.00 with the other $192.00 being charged to job 115 on line 5.

The line number on the journal should be checked off as each line is used. This is necessary because carbons, when mounted over the journal, cover everything except the two blank columns (which we have headed inventory) and the line number column and make it difficult to check the next open writing line. If the person who posts the invoices is taught to check off the line numbers, it will become automatic and no difficulty will be encountered.

Control

Examination of the illustrative entries shows clearly how costs on each job are classified. Since the journal is self-balancing (total debits equal total credits) and since the journal will be proved at least once each day, control over the accounts payable and job cost ledgers is absolute. Remember these points:

1. No entry can be made on a ledger unless it is on the board and
2. No entry can be made in columns 3 and 14 through 19 except as a carbon copy of an entry on an accounts payable or job cost ledger.
3. Therefore, proving the journal proves the accounts payable and job cost ledgers.

Daily posting

Daily posting of all available costs should be insisted upon even though on some days only a single posting be made. The major purpose of the system is to gain control of costs. The key to its success is that all related records be kept up to date and in balance at all times. Daily posting is, therefore, an absolute necessity.

That the user gains other benefits such as: (1) more even distribution of the work load in the office, (2) actual savings in clerical time, (3) elimination of month-end bottlenecks, and (4) complete confidence in his costs, is self-evident. But these are by-products. The major goal is up-to-the-minute cost information. Up-to-the-minute cost information means up-to-the-minute records. And up-to-the-minute records mean daily posting with daily proof.

Posting invoices

As stated before, it is assumed that before invoices are posted they will have been checked for receipt of materials, prices, and extensions and that the indicated cost distribution has been approved by the proper authority. Since posting cannot begin until invoices have been properly processed and approved, all personnel concerned with this phase of the operation should be cautioned to process the invoices promptly.

Invoices should be arranged in job order. Usually there will be several invoices, or other original media, for one job. Arranging them in job order will speed the posting operation since the job cost ledger for that job may be left on the board until all the invoices that pertain to it have been posted. If the volume of invoices for any one job is great, those invoices may be arranged alphabetically to facilitate their selection from the tray. Ordinarily, however, this will not be necessary.

While it is unlikely to happen, if an invoice is received which affects more than one job, it should be saved until last. Thus the maximum posting speed will be maintained on all of the invoices.

Assuming that the first invoice affects a job in progress, the steps in posting are as follows:

1. Run an adding machine tape on all of the invoices to be posted. This total will later be used as a control, or proof, total.

2. Select the first job cost ledger affected by the first group of invoices and mount it on the pegs on the right side. Select the accounts payable ledger for the first invoice and mount it on the pegs on the left side, making certain that the next open writing line on each ledger is aligned with the first unchecked line number on the journal.

3. Start the entry by copying the "balance due" (from the last column on the accounts payable ledger) into the "Old balance" column. Always make this transfer of the "balance due" to the "Old balance" column first. Complete entering the invoice, starting with the date and entering the gross amount in the "Credit" column under accounts payable as you would on any invoice register (except that the entry here is made on the ledger, of course).

4. On the adding machine, pick up the credit just entered and the last amount shown in the "Balance due" column on the ledger and post the resulting total as the new "Balance due." Note particularly that we did not use the amount we had previously entered in the "Old balance" column. By using the last balance figure in both instances, we prevent the possibility of a repetitive error.

5. Check off the line number.

6. Complete the entry on the job cost ledger distributing the amount of the invoice to the indicated cost classification. Do not neglect to enter the date, job number and description or vendor. The job number is the number shown on the job cost ledger and should agree with the job number to which distribution was indicated on the invoice. This serves to identify the entry on the journal and assures anyone looking at the ledger that no charges applicable to other jobs have been made to this job.

7. Remove the accounts payable ledger, file it, and select the ledger needed

to record the next invoice. Continue as above until all invoices affecting the job cost ledger on the board have been posted.

8. Remove and file the job cost ledger and select the one affected by the next group of invoices.

Invoices covering materials, supplies, or services not chargeable to a job are handled as above except that the job cost ledger is omitted from the board. Where it is desired to enter the vendor's name or a description in column 13, the carbon is lifted and the entry made directly on the journal. The same procedure is followed when posting costs to the job from media other than invoices, where the offsetting credit is to a column covered by carbon. In such a case, of course, the job cost ledger only would be on the board.

Proof

Posting should be proved (a) whenever a journal is completed, and (b) when posting for the day is completed. The various parts of the posting operation are proved as follows:

1. Pencil-foot all columns on the journal.

2. The net total of the accounts payable (credit totals less debit totals) must equal the prelist total of the invoices less any credit memos received from vendors or debit memos issued by the contractor.

This will prove not only that we have entered the correct amounts on the journal, but also on each individual accounts payable ledger.

3. The grand total of all debits on the journal must equal the grand total of all credits. If not, check each line to locate the error.

This step proves that for all credits (including those to accounts payables, already proved) there have been made offsetting debits in equal amounts.

4. The total of the "Prior balance" column, plus total accounts payable "Credits" less "Debits" (if any) must equal the total of the "Balance" column. Again, if out of balance, check each line to locate the error. Any error of this nature corrected on the journal must also be corrected on the proper ledger.

This proves that the balances have been extended correctly on each accounts payable ledger. (Errorless work will result if the recommended routine is followed exactly; pick up from the "Balance due" column when extending the new balance.)

The proof of the postings of the illustrative entries in Fig. A.2 is shown in steps numbered to correspond with those in the foregoing discussion.

1. All columns have been pencil-footed.

2. Prelist total of Invoices	$1,271.45
Total Accounts Payable "Credits"	$1,271.45

3. *Debits*		*Credits*	
Inventory	$ 380.40	Accounts payable	$1,271.45
Work in Progress:		Accrued payroll	254.00
Labor	254.00	Overhead absorbed	129.76
Material	720.20	Other credits	—0—
Subcontracts	217.00	Inventory	172.40
Overhead	129.76	Total	$1,827.61
Other costs	32.50		
Tel. & tel.	93.75		
Total	$1,827.61		

4. Prior Balance	$2,139.05
Accounts Payable Credits	1,271.45
Total	$3,410.50
Balance	$3,410.50

Payroll entries

Posting labor costs daily to job cost ledgers, as in illustrative entry No. 5, is the preferred method. If a UniSort, or some other type of daily job time card is used, this method can readily be followed by sorting the cards by job number, totaling, and recording the totals on a labor distribution sheet from which posting can be made to the job cost ledgers.

At the end of the week the only undistributed labor charges are those for indirect labor, supervision, maintenance, office salaries, etc. These are charged to the proper accounts in column 20 and credited to "Accrued payroll" in column 4.

One further entry is needed on the record of invoices. This entry is as follows:

Dr. Accrued payroll (column 4)	Gross amount of payroll
Cr. Accounts payable (column 3)	Net amount of payroll
Cr. Income tax withheld (column 20)	
Cr. F.I.C.A. tax (column 20)	
Cr. State D. or U.I. tax if required (column 20)	

The debit to "Accrued payroll" in the entry should, of course, be equal to the total of all the credits posted to the same column during the week.

The final entry is made on the check record when a check is written on general funds to reimburse the payroll bank account for the net amount of the payroll. The entry would be:

Dr. Accounts payable	Net amount of payroll
Cr. General bank account	Net amount of payroll

If labor costs are posted to the job cost ledgers only once a week, the credit to "Accrued payroll" (for the gross amount of the payroll) is made in total, and that and succeeding lines on the journal are used for posting to the individual jobs and to the indirect labor and expense accounts. The other two entries, given above, would then follow.

Disbursements

Integrally related to the record of invoices and work in progress, through the accounts payable ledger N571, is the record of checks drawn, Form N431 (Fig. A.3). A brief description of the disbursement procedure is, therefore, necessary to complete the accounts payable picture.

No distribution, with the possible exception of petty cash refund checks, is necessary, or recommended, on the check record. The act of filling in the stub of the check automatically debits "Accounts payable," credits "Discounts earned" (if a discount is involved), and credits the general bank account.

Petty cash reimbursements are an allowable exception to the rule that all expenses should be distributed on the record of invoices since the accounts payable control is not affected and the amounts expended from petty cash are generally small and do not materially affect the expense accounts.

If, however, it is the practice to take money from petty cash to pay for some small items purchased for jobs, it will be necessary, then, to set up an accounts payable ledger for petty cash and make all distributions, to jobs and expense, on the record of invoices at the time the fund is to be reimbursed. The debit to "Accounts payable" on the check record, when the reimbursement check is written, offsets the credit to "Accounts payable" on the record of invoices at the time of distribution.

Procedure

With a check record, Form N431, and a sheet of carbon on the board, it is only necessary to place a bank of 25 checks Form W524, on the pegs and adjust the rail until the writing line on the stub of the top check is aligned with the first open line on the journal. Once this is done, all succeeding checks are automatically in the correct position with respect to succeeding lines on the journal.

It is assumed, of course, that the invoices to be paid have been removed from the file and any discounts to be taken have been computed. If a group of invoices from one vendor are being paid, a tape should be attached showing the total gross amount, total discount and total net amount of the invoices in the group. The invoices to be paid, when removed from the file, will be in alphabetical order; this order should be maintained. A tape should be run on the gross amounts of the entire group of invoices to be paid in order to establish a control total.

The proper accounts payable ledger for the first invoice or group of invoices is selected from the posting tray, slipped under the checks (under one, or any number of checks), slid as far to the left as the pegs on the rail will permit it to go, and then slid up or down until the next open writing line is immediately under the writing line on the stub of the top check. (With a little practice this can be done almost instantaneously.) The first step is the one emphasized in the posting of invoices, picking up the amount shown in the "Balance due" column and entering it in the "Old balance" column. On the check these two column captions do not appear; the blank sections are used, however, just as though the captions were there, although they are shaded.

After picking up the old "balance," the rest of the check stub is completed. The date is entered, the check number (as it appears in the body of the check), the gross amount of the invoice or invoices, the discount percentage and amount, the net amount of the check, and the name of the payee. The check may then be removed from the board or flipped back to the left to expose the stub of the next check. When removed from the board, the checks are completed in the usual manner, and then presented for signature accompanied by the supporting invoices.

The column headed "Other deductions" is rarely used. It might be used, for example, where by mutual agreement the gross amount of the invoice was to be reduced without the formality of either a debit or a credit memo. This would be more likely to happen between a small general contracting firm and one of its small suppliers.

Proof

The same steps would be followed in proving the check record as were followed in proving the record of invoices and work in progress. All columns must first be totaled. Then the total debits to "Accounts payable" must equal the sum of the totals of the three credit columns, "Other deductions" (if any), "Discounts," and "Net check."

As proof of the posting to the ledgers, the total of the "Old balance" column should equal the sum of the totals of the "Accounts payable" debit and "Balance due" columns.

When checks have been written for all of the invoices, the grand total of the "Accounts payable" debit column on all journals (if more than one is used) must equal the control total previously established.

Appendix B

Machine Accounting Saves Time, Money for General Contractor

By D. Bryce Curwin

Office Manager, The R. S. Ursprung Co., Cleveland, Ohio
Reprinted from "The Constructor"

We scarcely know how to begin describing this new machine accounting system of ours. Words like "revolutionary," "incredible," and "fantastic" keep running through our mind. And that's just the way we feel about it.

Maybe the best thing to do is to take each accounting job and tell you how it's done by machine. We're saving over $250 a month in bookkeeping labor costs, but this is a very minor consideration in comparison to the kind of information, the up-to-dateness, and the accuracy of the records we have now.

Job costs

Here's a good one to start off with. When we had a pen-and-ink system, we kept job costs; I guess everyone does. But they were not broken down by classification; though we attempted to do it, we just couldn't get the figures in time to be of any real value. Also, we did not balance to any book figures.

This nightmare operation has now been transformed into the smoothest set-up imaginable. Glance if you will at the illustration (Fig. B.1) of original accounts payable entries, the one with the "distribution tickets" at the left side. Notice that, as a by-product of posting invoices to our accounts payable ledger, these distribution tickets are created.

Each distribution ticket shows the amount, job number and account number to which the dollar amount is to be distributed. "51,041" means job number 51–41; ".07" means account number 7 within that job. Some distribution tickets will indicate, of course, a general ledger account instead of a job cost.

After posting accounts payable, the total amount distributed to job costs (given by the machine) is posted to a job cost control account. The total of tickets to be distributed directly to general ledger is also kept in a memorandum account.

Once a week, distribution tickets are sorted down, by job by classification, and posted by machine directly to the "Material" column on the cost records (Fig. B.2). The total given by the machine must tie in with the material total for the week shown in the job cost control.

Similarly, labor is distributed directly from the "Payroll" to the "Labor" column on the cost records, and any subcontract work is also entered, from the subcontractor's invoice. Total labor and subcontract is posted to the job cost control. Note that the machine (a National "Class 31") automatically computes and prints up-to-date balances for labor, material, subcontract and miscellaneous, as well as the total balance for each cost record ledger card.

At the end of the month, a trial balance is taken of the total balance on each cost record and proved to the total balance on the job cost control. It is always tied in without the slightest difficulty.

Subcontract account

Please take a look now at the illustration of our machine-posted subcontract account (Fig. B.3). One of these accounts is kept for each subcontractor. As many who are reading this know (only too well!), it is exceedingly difficult sometimes to keep track of all subcontractors' accounts under a pen-and-ink system. At least we found it so. We had no record of either the unpaid or uncompleted balances, and overpayments occurred. There were so many figures to handle that errors could not be avoided. Our records were always sort of "halfway" in proof—and almost never completely up to date.

Note the manner in which our machine record takes care of the whole job for us. To-date balances for billings, payments, uncompleted, and unpaid balance are automatically figured and proved each time a posting is made.

Our subcontractors' accounts are now not only up to date, but they are 100 per cent accurate as well. Overpayments can never occur, because the machine would automatically print a red balance in the "Uncompleted" column if we inadvertently started to pay too much. (The posting to the subcontractors' accounts always takes place before checks are mailed out.)

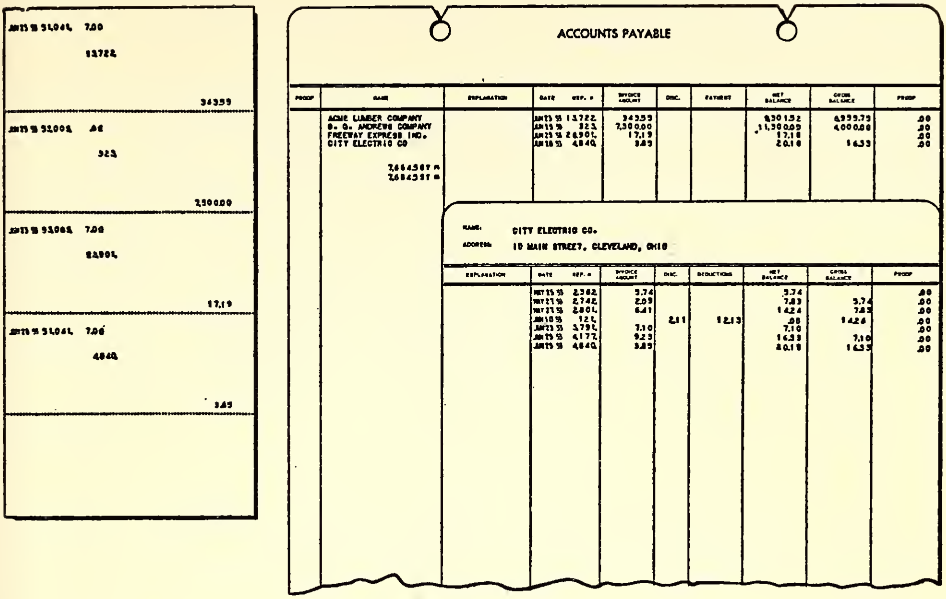

ACCOUNTS PAYABLE
PROOF
NAME
EXPLANATION
DATE
REF. #
INVOICE AMOUNT
DISC.
PAYMENT
NET BALANCE
GROSS BALANCE
PROOF
ACME LUMBER COMPANY
G. G. ANDREWS COMPANY
FREEWAY EXPRESS INC.
CITY ELECTRIC CO
NAME:
CITY ELECTRIC CO.
ADDRESS:
10 MAIN STREET, CLEVELAND, OHIO
EXPLANATION
DATE
REF. #
INVOICE AMOUNT
DISC.
DEDUCTIONS
NET BALANCE
GROSS BALANCE
PROOF

Fig. B.1 Job cost distribution and accounts payable ledger and journal

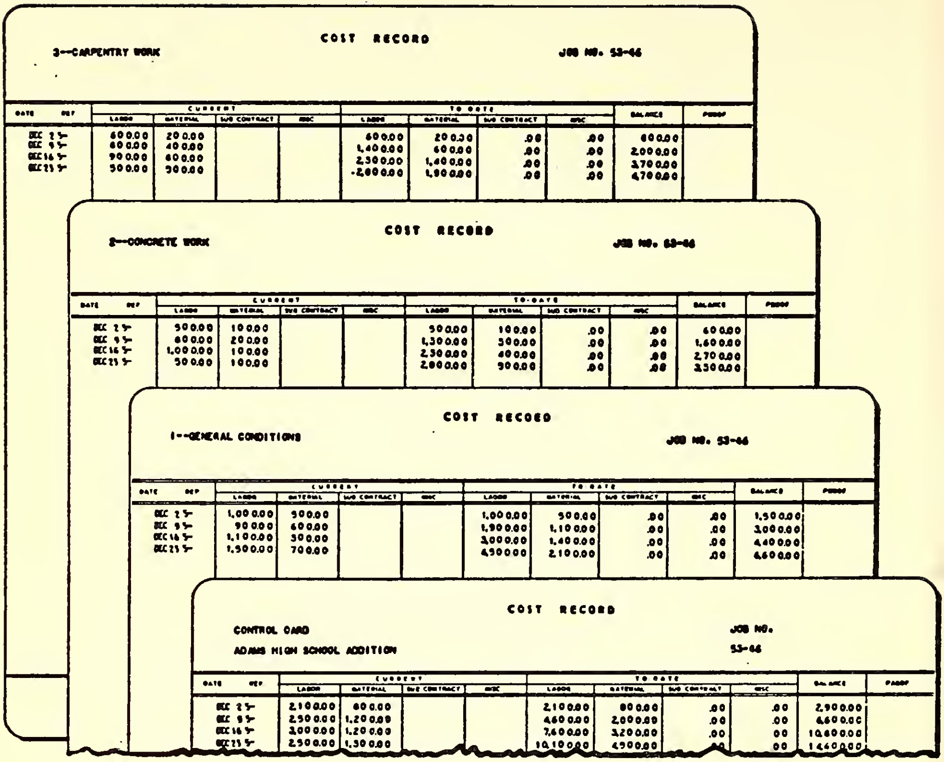
Distribution is made to perforated tickets as ledger and journal are posted. Machine automatically computes balances to date and accumulates all posted figures.

Accounts payable

As you can see in the illustration of forms (Fig. B.4), the accounts payable ledger and the accounts payable journal are created at one writing; distribution to tickets is also accomplished at the same time, as mentioned before. The balance on each ledger card is, of course, automatically computed and printed by the machine; the journal columns are automatically added while posting.

When amounts are paid, the cash disbursements journal, remittance advice and check are written at the same time that the debit is made to the individual accounts payable ledger, as illustrated. Again the balance for each vendor's account is printed by the machine, and the disbursements journal automatically totaled.

Since all records are made simultaneously, there is no problem of "tying them in" later on. For instance, in posting the invoices, all it is necessary to do is to first run an adding machine list of the net amounts. When entries are made to the ledger accounts, the machine automatically accumulates the net amount of each entry (as well as gross amount and discount). If the machine net total agrees with the adding machine total, you not only know that postings are correct, but that they are correct on all records.



COST RECORD

3—CARPENTRY WORK JOB NO. 53-46

DATE REF	CURRENT				TO DATE				BALANCE	PROOF
	LABOR	MATERIAL	SUB CONTRACT	MISC	LABOR	MATERIAL	SUB CONTRACT	MISC		
DEC 2 5-	600.00	200.00			600.00	200.30	.00	.00	800.00	
DEC 9 5-	800.00	400.00			1,400.00	600.00	.00	.00	2,000.00	
DEC 16 5-	900.00	800.00			2,300.00	1,400.00	.00	.00	3,700.00	
DEC 23 5-	500.00	500.00			-2,800.00	1,900.00	.00	.00	4,700.00	

COST RECORD

2—CONCRETE WORK JOB NO. 53-46

DATE REF	CURRENT				TO-DATE				BALANCE	PROOF
	LABOR	MATERIAL	SUB CONTRACT	MISC	LABOR	MATERIAL	SUB CONTRACT	MISC		
DEC 2 5-	500.00	100.00			500.00	100.00	.00	.00	600.00	
DEC 9 5-	800.00	200.00			1,300.00	300.00	.00	.00	1,600.00	
DEC 16 5-	1,000.00	100.00			2,300.00	400.00	.00	.00	2,700.00	
DEC 23 5-	500.00	100.00			2,800.00	500.00	.00	.00	3,300.00	

COST RECOED

1—GENERAL CONDITIONS JOB NO. 53-46

DATE REF	CURRENT				TO DATE				BALANCE	PROOF
	LABOR	MATERIAL	SUB CONTRACT	MISC	LABOR	MATERIAL	SUB CONTRACT	MISC		
DEC 2 5-	1,000.00	500.00			1,000.00	500.00	.00	.00	1,500.00	
DEC 9 5-	900.00	600.00			1,900.00	1,100.00	.00	.00	3,000.00	
DEC 16 5-	1,100.00	300.00			3,000.00	1,400.00	.00	.00	4,400.00	
DEC 23 5-	1,500.00	700.00			4,500.00	2,100.00	.00	.00	6,600.00	

COST RECORD

CONTROL CARD JOB NO.

ADAMS HIGH SCHOOL ADDITION 53-46

DATE REF	CURRENT				TO DATE				BALANCE	PROOF
	LABOR	MATERIAL	SUB CONTRACT	MISC	LABOR	MATERIAL	SUB CONTRACT	MISC		
DEC 2 5-	2,100.00	800.00			2,100.00	800.00	.00	.00	2,900.00	
DEC 9 5-	2,500.00	1,200.00			4,600.00	2,000.00	.00	.00	6,600.00	
DEC 16 5-	3,000.00	1,200.00			7,600.00	3,200.00	.00	00	10,800.00	
DEC 23 5-	2,500.00	1,300.00			10,100.00	4,500.00	.00	00	14,600.00	

Fig. B.2 Cost records

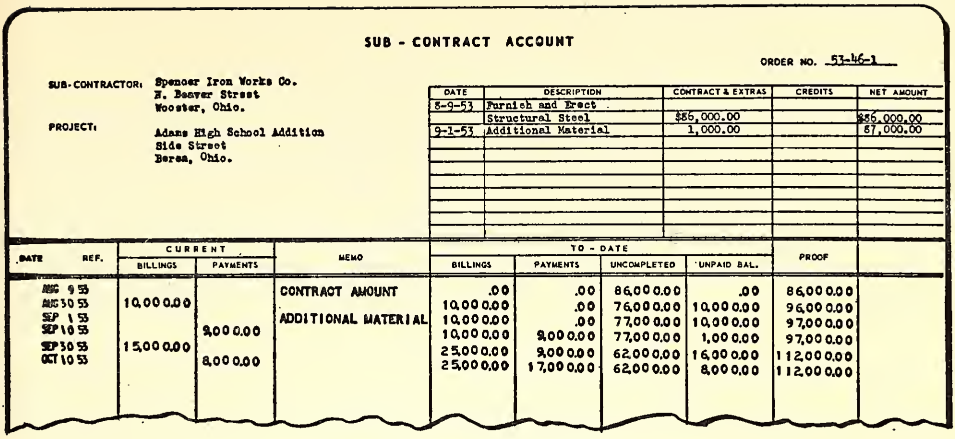
Data are posted directly to these records from other forms.

Payroll

The payroll is a good example of the "correct on all records" idea just mentioned. As the illustration (Fig. B.5) shows, the payroll journal, earnings record, and employee's pay statement are all done at the same time—so if one record is correct, all are correct. If we had a check payroll, the check and check register could be done at same writing.

Notice that the machine not only computes and prints gross and net pay for each employee, but also prints up to date balances for earnings, withholding tax and social security. This makes it very easy indeed to prepare quarterly 941-a and annual W-2 reports; it is simply a matter of copying totals, which is done by machine.

We have an average of about 200 people on the payroll at any one time. The man in charge of the payroll used to spend all day Tuesday, Wednesday



SUB - CONTRACT ACCOUNT

ORDER NO. 53-46-1

SUB-CONTRACTOR: Spencer Iron Works Co.
N. Beaver Street
Wooster, Ohio.

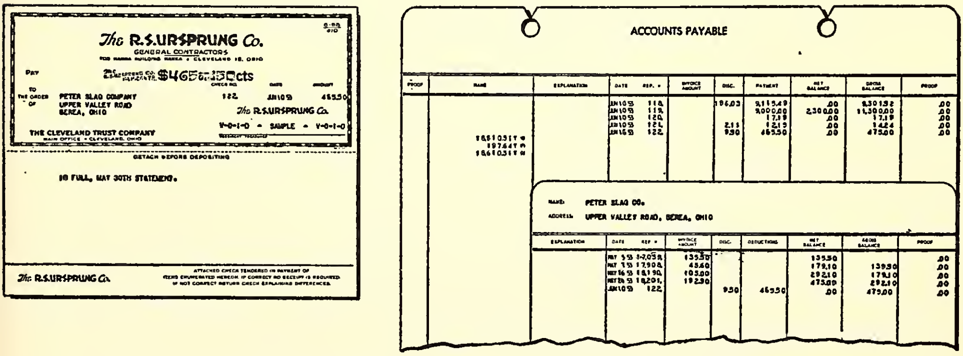
PROJECT: Adams High School Addition
Side Street
Berea, Ohio.

DATE	DESCRIPTION	CONTRACT & EXTRAS	CREDITS	NET AMOUNT
8-9-53	Furnish and Erect			
	Structural Steel	$86,000.00		$86,000.00
9-1-53	Additional Material	1,000.00		87,000.00

DATE	REF.	CURRENT		MEMO	TO - DATE				PROOF	
		BILLINGS	PAYMENTS		BILLINGS	PAYMENTS	UNCOMPLETED	UNPAID BAL.		
AUG 9 53				CONTRACT AMOUNT	.00	.00	86,000.00	.00	86,000.00	
AUG 30 53		10,000.00			10,000.00	.00	76,000.00	10,000.00	96,000.00	
SEP 1 53				ADDITIONAL MATERIAL	10,000.00	.00	77,000.00	10,000.00	97,000.00	
SEP 10 53			9,000.00		10,000.00	9,000.00	77,000.00	1,000.00	97,000.00	
SEP 30 53		15,000.00			25,000.00	9,000.00	62,000.00	16,000.00	112,000.00	
OCT 10 53			8,000.00		25,000.00	17,000.00	62,000.00	8,000.00	112,000.00	

Fig. B.3 Subcontract accounts

These accounts are kept up-to-date and in absolute proof. Note to-date balances for billings, payments, uncompleted, and unpaid balance. If overpayment were made, a red balance would appear immediately in the "uncompleted" column. These ledgers are posted before checks are mailed out.



The R.S.URSPRUNG Co.
GENERAL CONTRACTORS
CLEVELAND 15, OHIO

PAY $465 50 cts

TO THE ORDER OF PETER SLAG COMPANY
UPPER VALLEY ROAD
BEREA, OHIO

CHECK NO. 122

AMOUNT 465.50

The R.S.URSPRUNG Co.

V-0-1-0 - SAMPLE - V-0-1-0

THE CLEVELAND TRUST COMPANY
MAIN OFFICE • CLEVELAND, OHIO

DETACH BEFORE DEPOSITING

IN FULL, MAY 30TH STATEMENT.

The R.S.URSPRUNG Co.

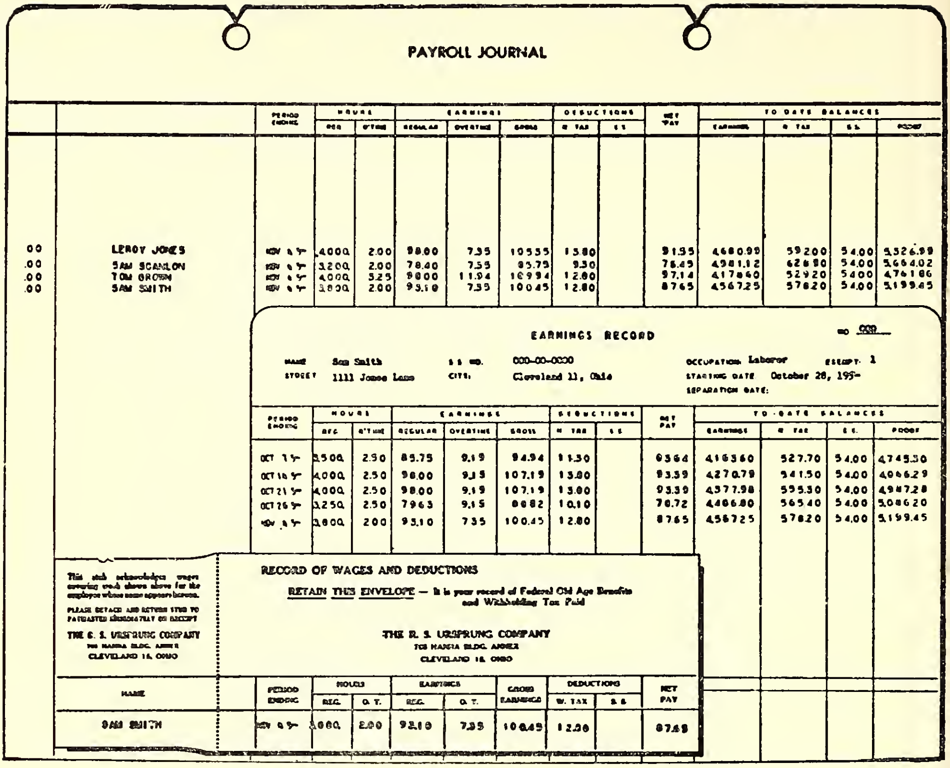
ATTACHED CHECK TENDERED IN PAYMENT OF ITEMS ENUMERATED HEREON. IF CORRECT NO RECEIPT IS REQUIRED. IF NOT CORRECT RETURN CHECK EXPLAINING DIFFERENCES.

ACCOUNTS PAYABLE

NAME: PETER SLAG CO.
ADDRESS: UPPER VALLEY ROAD, BEREA, OHIO

Fig. B.4 Check, remittance advice, accounts payable ledger, and cash disbursements journal

All are written simultaneously when payments are made.



PAYROLL JOURNAL

		PERIOD ENDING	HOURS		EARNINGS			DEDUCTIONS		NET PAY	TO DATE BALANCES			
			REG	O'TIME	REGULAR	OVERTIME	GROSS	W TAX	S S		EARNINGS	W TAX	S S	PROOF
00	LEROY JONES	NOV 4 5-	4000	2.00	98.00	7.35	10555	13.80		91.55	4680.99	59200	54.00	5326.99
.00	SAM SCANLON	NOV 4 5-	3200	2.00	78.40	7.55	85.75	9.30		76.45	4981.12	62690	54.00	5664.02
.00	TOM BROWN	NOV 4 5-	4000	5.25	9800	11.94	10994	12.80		97.14	417860	52920	5400	476186
.00	SAM SMITH	NOV 4 5-	3800	2.00	93.10	7.35	10045	12.80		8765	456725	57820	54.00	5199.45

EARNINGS RECORD

NO. 000

NAME Sam Smith S S NO. 000-00-0000 OCCUPATION Laborer EXEMPT. 1

STREET 1111 Jones Lane CITY: Cleveland 11, Ohio STARTING DATE October 28, 195-

SEPARATION DATE:

PERIOD ENDING	HOURS		EARNINGS			DEDUCTIONS		NET PAY	TO-DATE BALANCES			
	REG	O'TIME	REGULAR	OVERTIME	GROSS	W TAX	S S		EARNINGS	W TAX	S S.	PROOF
OCT 7 5-	3500	2.50	85.75	9.19	94.94	11.30		8364	416360	527.70	54.00	4745.30
OCT 14 5-	4000	2.50	98.00	9.15	107.19	13.80		93.39	4270.79	541.50	5400	4866.29
OCT 21 5-	4000	2.50	98.00	9.19	107.19	13.80		93.39	4377.98	555.30	54.00	4987.28
OCT 28 5-	3250	2.50	7963	9.15	8882	10.10		70.72	4466.80	56540	54.00	5086.20
NOV 4 5-	3800	200	93.10	735	100.45	12.80		8765	456725	57820	54.00	5199.45

This stub acknowledges wages covering week shown above for the employee whose name appears hereon.

PLEASE DETACH AND RETURN STUB TO PAYMASTER IMMEDIATELY ON RECEIPT

THE R. S. URSPRUNG COMPANY
708 HANNA BLDG. ANNEX
CLEVELAND 15, OHIO

RECORD OF WAGES AND DEDUCTIONS

RETAIN THIS ENVELOPE — It is your record of Federal Old Age Benefits and Withholding Tax Paid

THE R. S. URSPRUNG COMPANY
708 HANNA BLDG. ANNEX
CLEVELAND 15, OHIO

NAME	PERIOD ENDING	HOURS		EARNINGS		GROSS EARNINGS	DEDUCTIONS		NET PAY
		REG.	O. T.	REG.	O. T.		W. TAX	S S	
SAM SMITH	NOV 4 5-	3800	2.00	93.10	7.35	10045	12.80		8765

Fig. B.5 Payroll documents

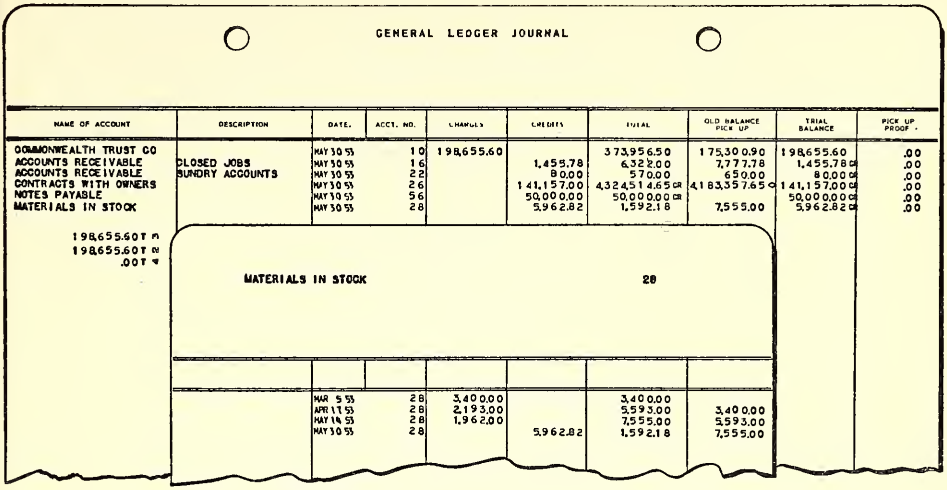
Pay statement is printed on outside of each employee's pay envelope, and earnings record and payroll journal are created in the same operation. Machine prints to-date balances for earnings, withholding tax, and F.I.C.A.; journal columns accumulate while posting.

and Thursday preparing it, and then spend all day Friday posting to the earnings records. The entire operation now takes less than a day.

General ledger

Even the general ledger is now on a machine basis. The general ledger and general journal are prepared at the same time (Fig. B.6), with account balances and journal accumulation being done automatically.

Before installation of the machine system, it was at least the 25th of the following month before financial statements could be placed on Mr. Ursprung's desk. Now they are there by the 9th—and indeed we could have them much earlier than that, except that we do not get all invoices in until the 8th.



GENERAL LEDGER JOURNAL

NAME OF ACCOUNT	DESCRIPTION	DATE.	ACCT. NO.	CHARGES	CREDITS	TOTAL	OLD BALANCE PICK UP	TRIAL BALANCE	PICK UP PROOF •
COMMONWEALTH TRUST CO		MAY 30 53	10	198,655.60		373,956.50	175,300.90	198,655.60	.00
ACCOUNTS RECEIVABLE	CLOSED JOBS	MAY 30 53	16		1,455.78	6,322.00	7,777.78	1,455.78 CR	.00
ACCOUNTS RECEIVABLE	SUNDRY ACCOUNTS	MAY 30 53	22		80.00	570.00	650.00	80.00 CR	.00
CONTRACTS WITH OWNERS		MAY 30 53	26		141,157.00	4,324,514.65 CR	4,183,357.65 C	141,157.00 CR	.00
NOTES PAYABLE		MAY 30 53	56		50,000.00	50,000.00 CR		50,000.00 CR	.00
MATERIALS IN STOCK		MAY 30 53	28		5,962.82	1,592.18	7,555.00	5,962.82 CR	.00

198,655.60T
198,655.60T
.00T

MATERIALS IN STOCK 28

	MAR 5 53	28	3,400.00		3,400.00	
	APR 17 53	28	2,193.00		5,593.00	3,400.00
	MAY 14 53	28	1,962.00		7,555.00	5,593.00
	MAY 30 53	28		5,962.82	1,592.18	7,555.00

Fig. B.6 General ledger and general journal

These forms are prepared together by machine. Financial reports can be prepared instantly under this system.

Operation of machine

All of the bookkeeping in our office is done by men. We thought at first—before we got the machine—that it might be necessary to employ a girl operator, but it was proved to us that such was not the case. To my way of thinking, there is no such thing as an "operator" for a National "Class 31" machine; anyone can operate it. The proof of that is in the fact that our men themselves run the machine; in fact, I use it for the general ledger.

The "31" does most of the work automatically; all the "operator" has to do is enter the figures on a regular adding machine keyboard and the machine takes care of the rest. Typing is done on the machine's standard keyboard electric typewriter. In order to switch from one job to another (for instance, from cost records to payroll), it is only necessary to change the control panel or "form bar" on the front of the machine, and this is accomplished in the twinkling of an eye.

It seems to us that there must be many other general contractors now using a pen-and-ink bookkeeping method who could greatly increase efficiency—and at the same time, profit—by using a system similar to ours. If the story of our machine system is helpful to others, the job of writing it will have been well worth the effort.

Appendix C

Conflicting Methods of Accounting for Construction Contracts

By Edward B. Wilcox

Partner, Wilcox, Harbinson & Co., Chicago; formerly president of the AICPA; member, committee on accounting procedure.

Report to the 1954 meeting of the American Institute of Certified Public Accountants

The percentage-of-completion method recognizes that income is realized during the period of construction as work on a contract progresses, whereas the completed-contract method defers all recognition of income until the related contract is completed. A choice between these methods does not necessarily affect the underlying records of the contractor, but it does affect the method of closing accounts at the end of fiscal periods and the preparation of financial statements.

The nature of contracting

One of the difficulties in discussing any phase of the contracting business and its accounting problems is the wide variety of contracts and the equally wide variety of contractors' organizations. A contract can be almost any kind of an agreement, and we are obviously not talking about contracts of employment, lease contracts, mortgages, or any other kind of agreement that has no relation to construction. In some cases, particularly with respect to the government, manufacturing concerns enter into contracts to make and sell products in their regular lines of manufacture, and sometimes products which are entirely foreign to their regular lines. These contracts may be subject to price redetermination or renegotiation, but they are not the things discussed here. Neither are cost-plus-fixed-fee contracts or any other kind of cost-plus contracts. In such cases there can be at least a general presumption that accrual of fees may be properly reflected in income as the work progresses and as costs are incurred. This is also reflected in income as the work progresses and as costs are incurred. This is also probably true in cases of contracts involving very simple unit operations, such as trucking or earth moving, where it can be clearly apparent that the service performed is related to a fee earned on a unit basis closely comparable to manufacture and sale of products.

Even after excluding the various kinds of contracts that are not subject to the problem of the percentage-of-completion method vs. the completed-contract method, there is still a wide variety of contracts to be considered. They include construction of roads, bridges, dams, buildings, subways, airports, pipelines, and ships. They are large and small and involve varying degrees of risks and uncertainties.

In general, early stages of contracts seem to involve the greatest risks. Bridge building may encounter white water or defective geological conditions such as quicksand. Excavations and foundations may encounter the same difficulty. Almost all job site construction is subject in a considerable degree to weather. There is risk of damage to adjacent properties. Work that is done underground such as subway construction is probably the most risky and the least certain of final outcome prior to completion. The smallest risks are apt to be incurred in such types of work as interior plumbing and wiring installation, which is usually done as a subcontract. While the subcontractor in many cases may not face exceptional hazards, the general contractor does depend to a considerable extent on the performance of his subcontractors, and this dependence constitutes one of his hazards. But typically, job site construction work involves risks that are apt to be greater than those involved in plant manufacture.

In addition to the variety of circumstances, there is considerable variety in contractors' organizations. These must necessarily expand and contract with the varying size of contracts in process. There is generally a central core of permanent organization with a large flexible organization built around each contract. Many contractors are corporations, but a percentage greater than in most other industries is unincorporated, or operated as proprietorships or partnerships. When very large jobs are handled it is customary for a group of contractors to join together and form a joint venture along partnership lines. Then the various contractors, whether they are individuals, corporations, or partnerships, are themselves partners in the joint venture. Sometimes instead of such a partnership of contractors' organizations, a special corporation is formed and the various contractors involved are its stockholders. In either case such organizations generally are terminated or liquidated at the end of the contract or series of contracts for which they were formed.

In many cases contractors specialize in certain kinds of work and a general contractor will perform the types of work which he prefers to do with his own organization and will sublet other types. Thus the same contractor can be both a prime contractor and a subcontractor. Contractors in such fields as electrical, plumbing, and heating installations are generally subcontractors. Those who do excavations, concrete work, and steel erection are apt to be general contractors, but they can be either or both simultaneously on different jobs.

Typically, a contractor who wishes to bid on a job will obtain the specifications and make a detailed estimate of his costs. This estimate may include subcontracts. The prime contractor will then submit a single over-all figure for the entire job, and if he is awarded the contract it will be signed and he will proceed with the work. Typically, this contract that he signs will contain provisions for progress payments. Such provisions might say that on or about the tenth of each month the owner shall pay 85 per cent of the value of the work done or materials delivered and secured at the job site based on the contract price and as estimated by the architect representing the owner. As a practical matter these provisions for progress payments would be rather difficult of implementation except in the simplest of circumstances. The custom is for the architect representing the owner to ask the contractor for a breakdown of the bid price into such major classifications as excavation, concrete work, steel erection, various subcontracts, and so on. With this breakdown the architect has, for example in the first stage of the work which may be excavation, a figure representing a part of the total bid price that he can relate to the excavation. If he determines that a certain percentage of the excavation is completed he can compute the value of the work done and the amount which may be requisitioned by the contractor under the progress payments provision of the contract. The function of the progress payments is primarily to finance the construction of the project by the owner rather than by the contractor. While it does not wholly accomplish that purpose, it minimizes the financing requirements that are placed on the contractor's organization.

In furnishing the architect with the breakdown, the contractor generally allocates somewhat disproportionately heavy amounts to the portions of the work which are to be performed first. This practice obviously aids the contractor in financing the entire project. It tends to offset the retainage that the progress payments provision of the contract authorizes the owner to withhold in order to insure the final and satisfactory completion of the work. Some contractors regard this retainage as a pernicious practice and consider that the so-called loading of early stages of the contract in the breakdown furnished to the architect is a necessary defense against it. They urge that both practices should be abandoned. Regardless of the merits of such proposals the practices of retainage and loading are fairly well established, and most architects make no objection to the loading so long as it appears to be within reason. Sometimes, however, approved interim billing may be influenced by policy or even political considerations.

With respect to the loading it should be pointed out that the architect is in no position to question the breakdown furnished to him other than on the grounds of general reasonableness. He will probably know the amount of the bids by subcontractors and for this reason loading of subcontracts is generally kept at a minimum. There is a special situation regarding what are sometimes called general conditions. These are over-all costs of construction such as superintendents' salaries, the erection of sheds and shelters, and temporary fencing and lighting, which cannot be specifically allocated to such divisions of the breakdown as excavations, concrete work, steel erection, and so on. Some architects require that general conditions be made one of the items of the breakdown. When this is done the progress payments can be made with some relation to the incurring of the related costs. When it is not done these general costs that are apt to be incurred early are an additional reason for the loading and tend to increase the financial burden on the contractor.

Another problem regarding the financing of construction jobs which leads to loading the breakdown arises from the fact that even within a single division of the breakdown there are early or preliminary costs that are not incurred in proportion as the work proceeds. For instance, in concrete work, forms and other initial costs that relate to this entire division of the breakdown are apt to be incurred, in part at least, before any concrete is poured. If the architect approves progress payments in proportion to the amount of concrete poured, the contractor will have to finance the early stages of this particular segment of the work even though the total progress payments for pouring concrete ultimately reimburse him for more than his costs.

Since the financing problems of the contractor are so important, it is possible that he may load the breakdown furnished to the architect so as to bill his entire estimated profit on the total contract considerably before it is completed, and even bill amounts in excess of his total incurred costs and total earned and unearned profit combined. When the contractor bills the owner for an approved drawing, he creates an account receivable on his own books. Presumably it will be paid promptly except for the authorized retainage. However, both the cash and the unpaid portion of the bill are represented in the contractor's assets. If the amount of such assets is exactly equal to the related costs of the work covered plus a proportionate amount of the over-all profit on the contract, the excess of billings over costs could be taken as representing profit earned to date. If, due to loading of early stages, the billings exceed the cost to date by more than the proportionate amount of the over-all profit, such excess might represent unearned profit on a portion of the work not yet performed. If, however, at any point the billings exceed the costs incurred to date plus the entire anticipated profit on the whole contract, that excess is in the nature of a payment by the owner in advance of work performed, and the contractor has a liability to the extent of such advance payment. It might be argued that this is not in fact an advance payment, since the owner has withheld retainage, and this might be true from a cash standpoint. From an accounting standpoint, however, it must be remembered that the retainage is included in the contractor's accounts receivable and is therefore presumed to have been realized by him. On this basis there can be a liability which should be reflected in the contractor's accounts.

A part of the contractor's concern with respect to his finances naturally relates to income taxes. Obviously the completed-contract basis defers the payment of income tax and therefore helps with financing. In view of the carry-back and carry-forward provisions of the tax law, the possibility of losses in some years and profits in others is not generally serious from a tax standpoint. For unincorporated contractors, however, irregular reporting of income may involve higher tax brackets than would be the case if the income were more evenly spread out.

For tax purposes either the percentage-of-completion method or the completed-contract method is available to contractors for contracts running for a period of twelve months or longer. For shorter contracts the taxpayer is required to use the accrual method, although just what this means with respect to construction contracts does not seem to be clearly set forth. In the case of the Jud Plumbing & Heating Company, the Tax Court said that the completed-contract method was an accrual method. In another case the court said that the acceptance of a finished well by a customer of a drilling company marked a completed transaction. These cases indicate that the completed-contract method is acceptable for both short- and long-term contracts. This seems reasonable since with respect to the short-term contracts the completed-contract method closely approximates the well-established accounting procedure with respect to manufacture and sale of goods, particularly where manufacturing job costs are used. Both inventories in the case of manufacturing, and costs in the case of contracting, are accumulated, and income is recognized at a point of realization marked by a sale of a completed product.

In general, it appears that any consistent tax method will probably be acceptable. Under prior laws the regulations made special provision permitting a taxpayer under the percentage-of-completion method to recompute his taxes for years not barred by the statute of limitations by using information available when contracts were finished. The present law and regulations are silent on this point, but it may be that the same permission is, or will be, available. In any case, the selection of tax procedures that will minimize taxes and assist in the financing of contracts is an important consideration to most contractors.

As was pointed out earlier in connection with progress payments, it is possible that a contractor has realized, either in the form of cash or accounts receivable, sums which represent unearned profit. Under the percentage-of-completion method the unearned profit would relate to work not done. Under the completed-contract method no portion of the profit is recognized prior to completion of the contract, so that any realization in excess of costs incurred, except for prepayment liabilities mentioned above, would be unearned profit. Since unearned profit is not taken up in income, provision is not normally made for the income taxes on such profit. This is logical with respect to the income statement, but raises a question with respect to the balance sheet. The cash and receivables or part of them are included in current assets, but the portion of these assets that will have to be paid out in income taxes when the profit is taken into account may be included in the item of unearned profit, but not set forth as a liability. Thus it is possible, during the course of a contract, that a balance sheet may indicate a sound financial position that will be seriously impaired when the contract is closed and the liability for taxes is taken into account. This tax situation raises the question as to whether under any method balance sheet figures that represent or include some unearned income should be segregated so as to indicate the portion of it that will become a tax liability at a later date.

This consideration has no effect on the income statement itself, and if we were to be governed by the broadly general consideration that the determination of income is paramount in financial statements, it might be regarded as relatively unimportant. However, contractors' financial statements are seldom used primarily as indications of earning power or as reports to shareholders. The nature of contractors' work and its inherent irregularity and discontinuity tend to minimize the significance of income statements as indications of earning power, and the fact that most contractors' organizations are rather closely held diminishes the necessity for reports of stewardship that will furnish guidance to stockholders. It appears therefore that the generality regarding the paramount nature of income determination does not apply to contractors' financial statements.

On the other hand, the balance sheet appears to be all-important. Contractors' financial statements are most often used for bank loans, performance bonds, and reports to municipalities and credit rating agencies. In all these situations the emphasis is on financial condition. There might appear to be a contradiction here due to the fact that construction is generally financed not by the contractor but by the owner through progress payments. However, we are talking about different orders of magnitude. A million dollar contractor may build a $20 million building. He is not expected to finance the entire cost, but he must finance the interim periods between his expenditures and the progress payments, and he must be capable of financing a loss and completing the contract if he makes a mistake or runs into trouble. It is these financial requirements that force him to borrow from banks, to put up performance bonds, and to qualify financially for municipal projects. Thus financing is one of a contractor's major problems, and for this reason primary consideration should probably be given to statements of financial position. Segregations between items representing unearned income and liabilities either to owners or for income taxes are significant, and accounting policies should be chosen that most clearly set forth the financial condition of the contractor.

Special problems in the percentage-of-completion method

The application of the percentage-of-completion method involves several problems depending on the procedures used. Some accountants have suggested that the progress payments are so carefully checked by the architects that they form a sound basis for measuring profit. The procedure would be to distinguish between costs that relate to the last authorized progress payment, and any costs of subsequent work not billed, or portions of general costs applicable to work subsequent to that approved by the last architect's certificate. The costs determined as expired would be related to the revenue from billing and the resulting profit would be carried into income. The faults of this proposal are twofold: the difficulty of segregating costs that relate to amounts billed from those that do not; and the overstatement of income that would result due to the typical loading of the breakdown of contracts for billing purposes.

Another procedure for implementing the percentage-of-completion method is to relate the incurred costs at any balance sheet date to the total original estimate. The percentage so determined could be applied to the total contract price in order to determine the portion of the revenue earned to date. The principal fault of this procedure is that it gives no consideration to deviations of incurred costs from the corresponding estimates, and the resulting percentage could be materially misleading. Thus if the portion of the work completed had cost considerably more than was estimated, the percentage indicated by the relationship of incurred costs to total estimate would be materially in excess of the percentage of physical completion.

Still a third procedure which has sometimes been suggested is to take into income that portion of the total contract price that bears the same relation to the total as the original estimate of the part of the work completed bears to the total original estimate of cost. This procedure has the merit of ignoring the loaded progress payments and does take into consideration the deviations from estimates that are represented in the incurred costs to date, since it is these incurred costs that are written off against the proportion of revenue taken into account by this procedure. It has, however, one of the disadvantages in the first procedure mentioned above, namely, that there must be a careful cut-off of costs to correspond to the cut-off used in arriving at the percentage of the original estimate representing completed work.

A fourth procedure is to obtain a new estimate of the cost to complete each contract at each balance sheet date. This new estimate of cost to complete is then added to the incurred costs to date, resulting in a new total estimated cost and therefore a new estimated profit. The percentage of this profit to total costs, according to this latest determination, is then applied to the incurred costs to date, and the result is the amount carried into income. This procedure avoids some of the difficulties of other procedures, but it subject to the criticism that the determination of cost to complete for purposes of determining income is highly subjective and difficult to verify.

The conflict in rather basic theory between the last two mentioned procedures is particularly interesting. The former appears to regard the original estimate as having special validity and significance. There is an apparent assumption here that the original estimate was made with a view to a uniform profit percentage on every part of it. It follows from this view that any deviation in actual cost from the original estimate will represent an increase or decrease in income in the period when that deviation took place. Thus we might have unexpected costs in excavation, due possibly to quicksand, so that under the former procedure we would record a loss at the conclusion of the excavation, although the over-all contract might still be believed to be profitable and might actually turn out to be so. It is not entirely clear why the relationship among the items in the original estimate should be endowed with such special significance in the measure of income during construction.

On the other hand, the last mentioned procedure apparently is based on a philosophy that the contract should be regarded as a unit even though income is being recognized on a percentage-of-completion method. There are four possible situations that could affect income determination under this procedure: Costs incurred prior to the balance sheet date could be either more or less than original estimates, and revised estimates to complete could be either more or less than original estimates. The last named procedure permits any or all of these situations to affect the anticipated profit from the entire contract, and therefore to affect the income said to be earned either during, or before or after, the occurrence of events or their anticipation. This unit treatment of the contract may raise a doubt as to the consistency of the philosophy that uses it in determining income according to the percentage-of-completion method.

Special problems in the completed-contract method

Ordinarily, in accounting for business income it is customary to regard general and administrative expenses as period costs to be written off as incurred. However, in the case of contractors having relatively few long-term contracts, the writing off of administrative expenses could result in the reporting of losses for a year in which no contract might be closed, and it therefore appears that the deferring of all general, administrative, and possibly selling expenses, by allocation of these expenses to costs of contracts in process, would be desirable. This is comparable to the capitalization of all costs and expenses of a new company during a period of plant construction. On the other hand, in the case of many short-term contracts the deferring of general and administrative expenses seems unnecessary, and consideration of both simplicity and conservatism would indicate that it should not be done. Possible inconsistency between different contractors does not appear to be too serious, because the difference in treatment would reflect a difference in the nature of the business. When a single contractor has both long- and short-term contracts, the decision should be based on the predominant type of contract as to length, and should be applied consistently to all contracts.

Another problem arises in connection with the completed-contract method when a contractor adopts the policy of charging contract costs with rental of his own equipment. Customarily this rental is credited to a warehouse or rental equipment division, which is charged with related costs such as depreciation and maintenance. In order to avoid violating the principle of the completed-contract method by taking up income prior to the completion of the contract, care must be exercised to see that the portion of the warehouse or rental equipment division profit related to uncompleted contracts is not taken into income. Probably the best way to do this is to reverse the portion of the warehouse or rental equipment division profit related to uncompleted contract accounts. This reversal could be made on each balance sheet date, and the amounts could be immediately reinstated thereafter. Similar considerations might follow from standard charges for insurance or social security taxes, which are sometimes made as accruing contract costs with corresponding credits to other accounts. Quite often these charges are in amounts greater than the actual liabilities for these costs as finally determined.

Losses on contracts in process

One problem that both the percentage-of-completion and the completed-contract methods have in common is that of providing for losses on uncompleted contracts. A strict, literal following of the percentage-of-completion method would result in taking into income the portion of such a loss incurred at any balance sheet date, but not any portion relating to the uncompleted part of the contract. A similarly strict, literal following of the completed-contract method would not take up any part of such a loss. However, if the circumstances indicate that a loss will result, the fact that the contractor is committed to sustain it indicates that provision should be made for the entire anticipated loss, even though this may appear to be inconsistent with the method used for recognition of profits on contracts. The apparent inconsistency is no greater than the widely adopted one between the general practice of providing for all accruing losses, and the principle that income is not recognized until it is realized. It is most nearly comparable to the general situation with respect to firm purchase commitments at fixed prices; losses are recognized when market prices drop, but unrealized profits due to rising market prices are not. The difference between the percentage-of-completion method and the completed-contract method in this regard is that the special loss provision required would generally be greater under the latter method than under the former. In either case, since the special provision for losses would not be deductible from taxable income, it should probably be computed net of its tax effect.

Advantages and disadvantages of the two methods

The arguments in support of and against the two methods can be grouped under four headings:

1. *Regularity of income:* The chief advantage often claimed for the percentage-of-completion method is that it results in regular recognition of income, or at least comparatively more regular recognition, when the income is earned, than does the completed-contract method. The desirability of regular recognition of income is somewhat minimized, however, by the fact that contractors' income, particularly in the case of long-term contracts, is by its very nature irregular, however measured, and that their typically useful financial statement is more apt to be the balance sheet than the income statement. Regular recognition of income as an indication of earning power is not generally of great significance to contractors. The thought that income should be recognized as earned raises the entire question of carrying inventories or investments at cost, and the question here is whether contractors' accounts should constitute an exception to that general practice. It is sometimes urged that the percentage-of-completion method results in greater fairness to shareholders and possibly to employees under bonus and profit sharing plans, although it is doubtful that any greater fairness to these groups can be achieved than by placing them on the same basis as that which seems sound from the standpoint of the company.

2. *Objectivity:* The principal advantage of the completed-contract method is that the result of each contract can be determined with a satisfactory degree of accuracy and objectivity, and can be made subject to adequate verification. It is conservative in the desirable sense in that it conforms to the well-established realization postulate in accounting. A contract is not final until its completion, and the later stages of the work may involve unforeseen costs and possible losses. Any basis on which income is recognized under the percentage-of-completion method necessarily involves subjective elements of judgment that are difficult of verification, and, while subjectivity is unavoidable in accounting, its minimization is always a desirable goal. To a great extent, the validity of these considerations depends upon the degree of risk and uncertainty involved, and circumstances will alter cases. However, in general it is safe to say that contracting is a more than ordinarily hazardous business, and therefore corresponding conservatism is appropriate. That appears to be the view of many people who are in it, and of bankers and bonding companies who have served it. It is significant that bankers generally seem to prefer the completed-contract method.

On the other hand, it may be that the completed-contract method permits an element of managerial caprice not possible under the percentage-of-completion method. Income can be manipulated as between years by deliberately hastening or deferring the closing of a contract. This charge is subject to two questions: (1) Whether it is undesirable that any business enterprise should have the privilege of timing its actual operations as it wishes, and (2) Whether the opportunities for caprice are really any greater than those existing under the percentage-of-completion method in estimating the status or future of contracts in process. It is obviously of no great importance as far as guidance to management is concerned, because management knows more about the status of the contracts than can be learned from financial statements. Neither is it very important from the standpoint of income statements as indications of earning power, since most contractors are closely held and even under percentage-of-completion methods contractors' income is subject to wide fluctuations.

3. *Presentation of assets and liabilities:* One of the arguments advanced in favor of the percentage-of-completion method is that it facilitates a more meaningful presentation of assets and liabilities. The income tax liability on the profit taken into income is reflected in the accounts. Expired costs are written off, and there may remain among the assets only an inventory or deferred charge relating to work not done. There may also be reflected an unbilled account receivable representing a portion of the contract price earned but not subject to billing at the balance sheet date under the progress payments provision of the contract. The basis of computation of income earned under the percentage-of-completion method affords a basis of computing provisions for losses, and of segregating any net credit balance as between prepayments by owners, unearned income, and the income tax liability related to unearned income. By comparison, the completed-contract method might be reflected by net debit or credit balances in the nature of suspense items that would not disclose these elements.

It should be pointed out, however, that the usefulness of this balance sheet information is dependent on the accuracy and dependability of the computations by which it is developed, and that similar information can be developed when the completed-contract method is used. This point is particularly significant when, as often is the case, there is difficulty in ascertaining the amount of liabilities, to suppliers and subcontractors for work done, that should be taken into account. Under the percentage-of-completion method omission of such liabilities results in a misstatement of both income and liabilities; under the completed-contract method the effect is limited to a misclassification of liabilities.

4. *Income tax effect:* An important consideration that influences contractors is the burden of financing construction in process. The fact that the completed-contract method results in deferring the payment of income taxes is therefore a practical advantage, particularly to corporations. Unincorporated contractors, on the other hand, may be penalized by the com-

pleted-contract method if it results in such irregular taxable income that excessively high rates are incurred. While this consideration is not an accounting problem, it may have considerable weight in a decision between the two methods.

Criteria for selection of method

In view of the great difference between various contracts and between various contractors' organizations, it appears that either the percentage-of-completion method or the completed-contract method may be the more appropriate in a given case. It is even conceivable that the same contractor might properly use one method in some cases and the other method in other cases, although in general this would not be desirable.

There seems to be little point in adopting the percentage-of-completion method in the case of a contractor who has many short-term contracts. Such a contractor is closely comparable to a job-order manufacturer, such as a printer, whose inventories of work in process are generally carried at cost. Under either method the contractor's income would be reflected in a fairly regular manner. It is unlikely that such a contractor would be receiving progress payments in material amounts, and he would therefore not be apt to have the problems of asset and liability classification typical of contracts of longer duration. His accounting would be both simpler and sounder under the completed-contract method.

For very different reasons it would be undesirable for a contractor engaged in long-term contracts that involve a high degree of risk and uncertainty to adopt the percentage-of-completion method. Such contracts might depend on unfavorable weather or ground or water conditions, or on hostile surroundings or precarious labor relations, or on judgments without precedent or much guiding experience. Sometimes claims against contractors, even though they arise in early stages of the work, are pending in dispute or litigation throughout the entire term of the contract, and its final result might depend on their outcome. When high degrees of risk are involved, the completed-contract method is the part of discretion.

In many cases contractors do not have well-developed accounting systems, and reliance on internal methods must be limited. In such cases the accounting methods may be adequate for the application of the completed-contract method, but not for the percentage-of-completion method. Then the choice of method should be based on the available evidential matter, and that choice would generally be in favor of the completed-contract method.

There remain the cases where the term of contracts is long, generally substantially more than twelve months, the extent of risk and hazard is not excessive, and the internal methods are dependable. A great deal of building construction, some types of bridge and highway construction, and sometimes ship or power plant construction, will meet these requirements. In these cases the percentage-of-completion method is appropriate, and its advantages will outweigh its disadvantages. This is particularly true in circumstances where determination of income and indication of earning power are paramount.

As a practical matter, borderline cases will be encountered in which the foregoing criteria are not clear or in which they are conflicting. One difficulty is that the long-term contracts that justify the percentage-of-completion method are sometimes the most uncertain of final result. In some cases the nature of the contract may justify the percentage-of-completion method whereas the accounting methods of the contractor may not. When there is doubt the question should be resolved in favor of the completed-contract method, so as to avoid the possibility of taking into income unearned profits that may never be realized.

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Date Due

Due	Returned	Due	Returned
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~~DEC 1 6 '63~~			
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